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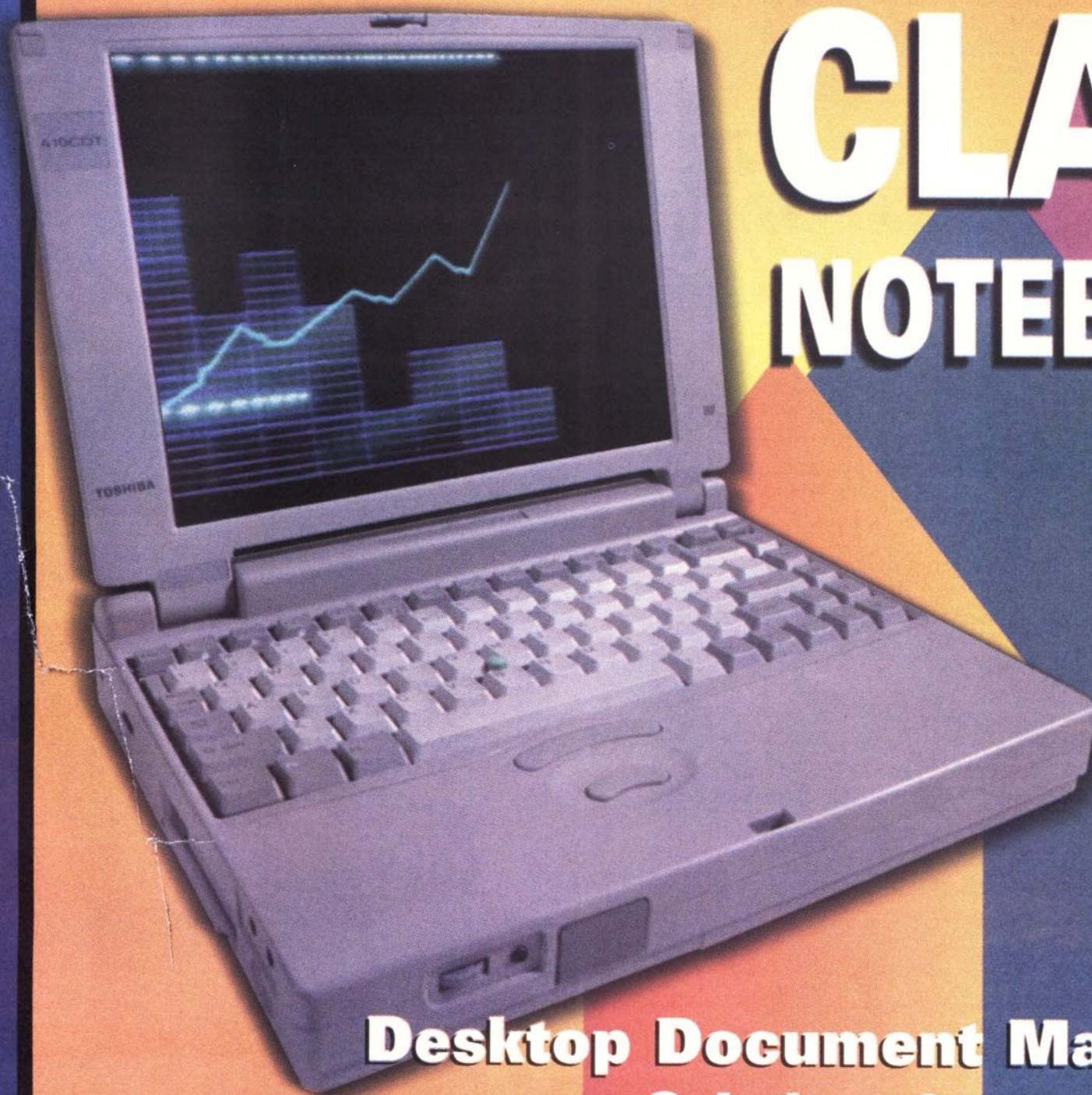
# *The* **COMPUTER PAPER**<sup>TM</sup>

NEWS      REVIEWS      FEATURES

B.C. (LOWER MAINLAND) EDITION JULY 1996 VOLUME 9 NO. 7

**LAB TEST**

# **BUSINESS CLASS NOTEBOOKS**



**Desktop Document Management  
Solutions for your paper glut**

**Camp Sites  
Summer computing adventures for kids**

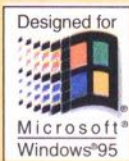


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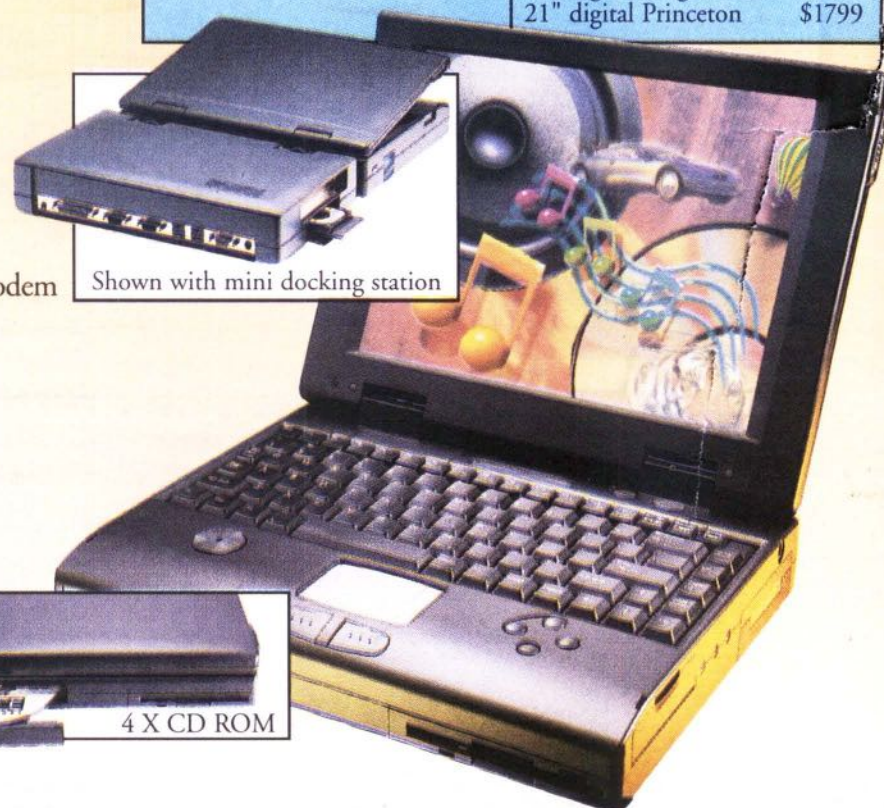
**Delta Microsystems**

| Specifications   | Options  |             |     |                   |      |                   |       |                   |       |            |  |           |      |           |       |                                   |       |       |  |              |       |       |  |           |      |           |       |           |       |     |  |           |       |            |        |          |  |                         |       |                       |        |
|--|--|-------------|-----|-------------------|------|-------------------|-------|-------------------|-------|------------|--|-----------|------|-----------|-------|-----------------------------------|-------|-------|--|--------------|-------|-------|--|-----------|------|-----------|-------|-----------|-------|-----|--|-----------|-------|------------|--------|----------|--|-------------------------|-------|-----------------------|--------|
| <ul style="list-style-type: none"> <li>Intel Pentium 100 processor</li> <li>1 GB Hard drive</li> <li>Integrated 64-bit PCI local bus graphics</li> <li>16 MB RAM</li> <li>15" SVGA Mag Monitor</li> <li>256 KB pipeline burst cache</li> <li>1.44 MB floppy</li> <li>Quad-speed CD-ROM</li> <li>Mid tower case</li> <li>104 Keyboard</li> <li>Preloaded Win 95 on CD</li> <li>3 year warranty</li> <li>Quicken, MS Works</li> <li>16 bit sound card with speakers</li> </ul> | <table> <tr> <th>Hard Drives</th><th>Add</th></tr> <tr> <td>1.6 GB Hard drive</td><td>\$89</td></tr> <tr> <td>2.0 GB Hard drive</td><td>\$220</td></tr> <tr> <td>2.6 GB Hard drive</td><td>\$329</td></tr> <tr> <th>Multimedia</th><td></td></tr> <tr> <td>6X CD-ROM</td><td>\$79</td></tr> <tr> <td>8X CD-ROM</td><td>\$109</td></tr> <tr> <td>AWE-32 wave table with sound card</td><td>\$179</td></tr> <tr> <th>Cache</th><td></td></tr> <tr> <td>512 KB Cache</td><td>\$119</td></tr> <tr> <th>Video</th><td></td></tr> <tr> <td>2 MB DRAM</td><td>\$99</td></tr> <tr> <td>2 MB VRAM</td><td>\$159</td></tr> <tr> <td>4 MB VRAM</td><td>\$599</td></tr> <tr> <th>RAM</th><td></td></tr> <tr> <td>32 MB RAM</td><td>\$769</td></tr> <tr> <td>64 MB DRAM</td><td>\$2450</td></tr> <tr> <th>Monitors</th><td></td></tr> <tr> <td>17" digital Mag monitor</td><td>\$399</td></tr> <tr> <td>21" digital Princeton</td><td>\$1799</td></tr> </table> | Hard Drives | Add | 1.6 GB Hard drive | \$89 | 2.0 GB Hard drive | \$220 | 2.6 GB Hard drive | \$329 | Multimedia |  | 6X CD-ROM | \$79 | 8X CD-ROM | \$109 | AWE-32 wave table with sound card | \$179 | Cache |  | 512 KB Cache | \$119 | Video |  | 2 MB DRAM | \$99 | 2 MB VRAM | \$159 | 4 MB VRAM | \$599 | RAM |  | 32 MB RAM | \$769 | 64 MB DRAM | \$2450 | Monitors |  | 17" digital Mag monitor | \$399 | 21" digital Princeton | \$1799 |
| Hard Drives  | Add  |             |     |                   |      |                   |       |                   |       |            |  |           |      |           |       |                                   |       |       |  |              |       |       |  |           |      |           |       |           |       |     |  |           |       |            |        |          |  |                         |       |                       |        |
| 1.6 GB Hard drive  | \$89   |             |     |                   |      |                   |       |                   |       |            |  |           |      |           |       |                                   |       |       |  |              |       |       |  |           |      |           |       |           |       |     |  |           |       |            |        |          |  |                         |       |                       |        |
| 2.0 GB Hard drive  | \$220  |             |     |                   |      |                   |       |                   |       |            |  |           |      |           |       |                                   |       |       |  |              |       |       |  |           |      |           |       |           |       |     |  |           |       |            |        |          |  |                         |       |                       |        |
| 2.6 GB Hard drive  | \$329  |             |     |                   |      |                   |       |                   |       |            |  |           |      |           |       |                                   |       |       |  |              |       |       |  |           |      |           |       |           |       |     |  |           |       |            |        |          |  |                         |       |                       |        |
| Multimedia   |  |             |     |                   |      |                   |       |                   |       |            |  |           |      |           |       |                                   |       |       |  |              |       |       |  |           |      |           |       |           |       |     |  |           |       |            |        |          |  |                         |       |                       |        |
| 6X CD-ROM  | \$79   |             |     |                   |      |                   |       |                   |       |            |  |           |      |           |       |                                   |       |       |  |              |       |       |  |           |      |           |       |           |       |     |  |           |       |            |        |          |  |                         |       |                       |        |
| 8X CD-ROM  | \$109  |             |     |                   |      |                   |       |                   |       |            |  |           |      |           |       |                                   |       |       |  |              |       |       |  |           |      |           |       |           |       |     |  |           |       |            |        |          |  |                         |       |                       |        |
| AWE-32 wave table with sound card  | \$179  |             |     |                   |      |                   |       |                   |       |            |  |           |      |           |       |                                   |       |       |  |              |       |       |  |           |      |           |       |           |       |     |  |           |       |            |        |          |  |                         |       |                       |        |
| Cache  |  |             |     |                   |      |                   |       |                   |       |            |  |           |      |           |       |                                   |       |       |  |              |       |       |  |           |      |           |       |           |       |     |  |           |       |            |        |          |  |                         |       |                       |        |
| 512 KB Cache   | \$119  |             |     |                   |      |                   |       |                   |       |            |  |           |      |           |       |                                   |       |       |  |              |       |       |  |           |      |           |       |           |       |     |  |           |       |            |        |          |  |                         |       |                       |        |
| Video  |  |             |     |                   |      |                   |       |                   |       |            |  |           |      |           |       |                                   |       |       |  |              |       |       |  |           |      |           |       |           |       |     |  |           |       |            |        |          |  |                         |       |                       |        |
| 2 MB DRAM  | \$99   |             |     |                   |      |                   |       |                   |       |            |  |           |      |           |       |                                   |       |       |  |              |       |       |  |           |      |           |       |           |       |     |  |           |       |            |        |          |  |                         |       |                       |        |
| 2 MB VRAM  | \$159  |             |     |                   |      |                   |       |                   |       |            |  |           |      |           |       |                                   |       |       |  |              |       |       |  |           |      |           |       |           |       |     |  |           |       |            |        |          |  |                         |       |                       |        |
| 4 MB VRAM  | \$599  |             |     |                   |      |                   |       |                   |       |            |  |           |      |           |       |                                   |       |       |  |              |       |       |  |           |      |           |       |           |       |     |  |           |       |            |        |          |  |                         |       |                       |        |
| RAM  |  |             |     |                   |      |                   |       |                   |       |            |  |           |      |           |       |                                   |       |       |  |              |       |       |  |           |      |           |       |           |       |     |  |           |       |            |        |          |  |                         |       |                       |        |
| 32 MB RAM  | \$769  |             |     |                   |      |                   |       |                   |       |            |  |           |      |           |       |                                   |       |       |  |              |       |       |  |           |      |           |       |           |       |     |  |           |       |            |        |          |  |                         |       |                       |        |
| 64 MB DRAM   | \$2450   |             |     |                   |      |                   |       |                   |       |            |  |           |      |           |       |                                   |       |       |  |              |       |       |  |           |      |           |       |           |       |     |  |           |       |            |        |          |  |                         |       |                       |        |
| Monitors   |  |             |     |                   |      |                   |       |                   |       |            |  |           |      |           |       |                                   |       |       |  |              |       |       |  |           |      |           |       |           |       |     |  |           |       |            |        |          |  |                         |       |                       |        |
| 17" digital Mag monitor  | \$399  |             |     |                   |      |                   |       |                   |       |            |  |           |      |           |       |                                   |       |       |  |              |       |       |  |           |      |           |       |           |       |     |  |           |       |            |        |          |  |                         |       |                       |        |
| 21" digital Princeton  | \$1799   |             |     |                   |      |                   |       |                   |       |            |  |           |      |           |       |                                   |       |       |  |              |       |       |  |           |      |           |       |           |       |     |  |           |       |            |        |          |  |                         |       |                       |        |

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| 200Mhz Pentium pro | \$1299 |

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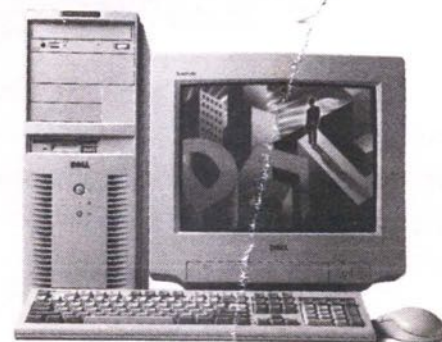
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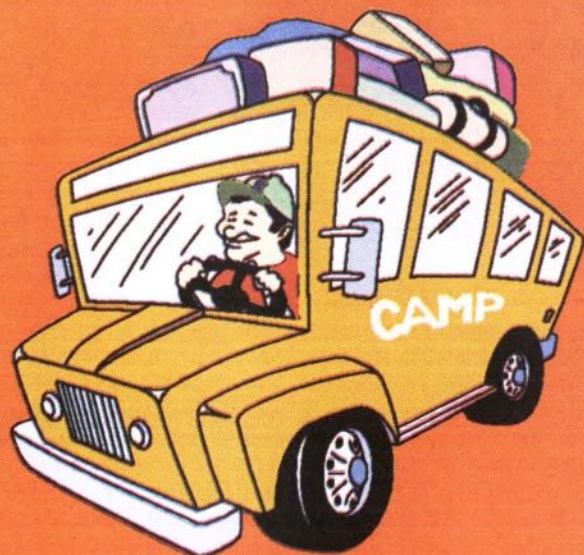
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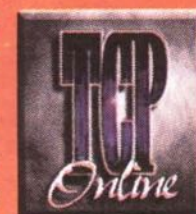
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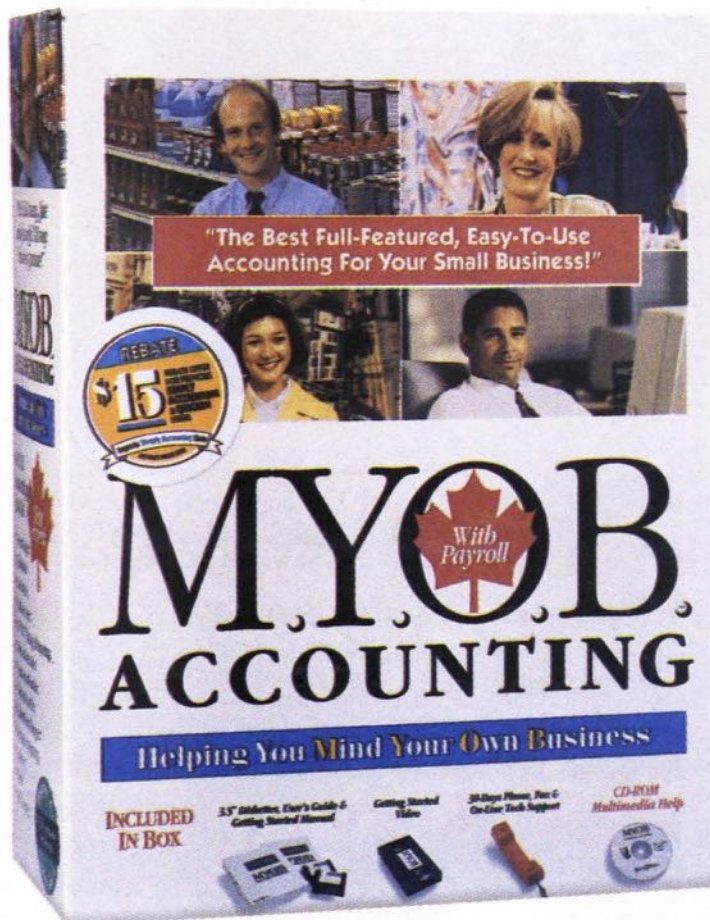
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## FROM THE EDITOR

"That's all the time we have folks, join us again next week..."

I did a computer radio show recently and, as often happens on radio, I didn't get to go through all the material I had prepared (you know the game—this hour has 22 minutes).

I had what I thought was a good summary of what to look for when purchasing a computer, so I'd like to share it with you. Much of this information came from reading the ads in *The Computer Paper* and talking to our Lab-meister, Chris Fisher at TCP Labs. (To hear the radio program, check out [www.cknw.com](http://www.cknw.com) on the Internet. To do this, you need RealAudio 2.0.)

### Power shift

This year has been one of incredible improvements in what you can get for your money. In September of 1995, an entry-level machine was a 486 with 8 MB of RAM, a 300 MB hard drive, a 2x CD-ROM drive, a 14-inch monitor, some cheap speakers, a 14.4K modem, and software—all for about \$3,000.

Today, the 486 has all but disappeared from the desktop market, a casualty of the aggressive moves of Intel, in its desire to prevent the loss of market share to other CPU makers like Cyrix. An entry-level machine today is a 75 to 100 MHz Pentium with 8 MB of RAM, a 500 MB hard drive, and a 4x CD-ROM drive—all this starting at around \$1,600.

### What to buy today

This is a loaded question. Obviously what you buy is best determined by thorough evaluation of your needs, what you will be using the computer for, what software you will be running, and what kind of computer your friends/company/available support people have. (Many people will want to consider purchasing a Macintosh because of their ease of use and the fact that their friends have them and love them. For publishing, music, Web creation, and digital video, they are a popular choice. Many of my comments on RAM, hard drives, CD-ROM drives and modems below apply to Macs as well, just ignore the bits that are specific to PCs.) Having said that, the lion's share of people today are likely to buy some kind of IBM-PC compatible.

After choosing a brand name and a vendor, consider what you want in your new PC.

**Motherboards and RAM:** Get faster EDO memory and L-2 pipeline burst cache of at least 256K, they will add five to 10 percent to the price, but can easily improve performance by more than that. Almost all motherboards do Plug and Play now if your operating system supports it. If possible, buy a motherboard that supports a range of processor speeds because you will likely upgrade the processor over the life of the system. Again, if you can afford it, buy lots of RAM. RAM prices have dropped amazingly in the past few months, and because it is such a commodity, it is difficult to know if it will continue downward. The "sweet spot" for running basic applications in Windows 95 is 16 MB of RAM. Photoshop, CAD programs or digital-video applications need 48, 64 or even 128 MB of RAM to really perform.

**Chips and things:** Hurrah to the forces of competition. Processing power is up by a huge leap. We may be nearing the end of Moore's Law, which claims that there is a doubling of processor power every 18 months. It is hard to imagine how vendors can continue at this rate of innovation, but they have surprised us continuously in the past.

**Modems:** Get a 28.8K modem for the extra \$80 over a bundled 14.4K modem. If you are Net surfing, you will thank yourself after a couple of minutes online. If plan to earn your living through

the Internet, consider that you can get an ISDN modem for less than \$400. An ISDN line installation from the phone company will cost you \$100 or so, and then you will pay about twice the usual business phone rate for the monthly charge on the line.

**Video cards and monitors:** Get a better quality video card. Good names include Matrox and ATI (both Canadian companies) and Diamond. In general, you get what you pay for in video cards.

More video RAM will give you more colors. Buy a big monitor if you can afford the bucks. A 17-inch monitor will still be giving you pleasure in a few years, even if you have sold off or upgraded the system underneath it.

**Hard drives:** Hard drive prices took a drop over a period of several months and now seem to have stabilized. SCSI drives are still king on the Macintosh side and for servers. EIDE is for the masses. It now supports up to four drives (two

master-slave relationships), including CD-ROMs and removable or tape drives. EIDE also does faster throughput now and supports higher capacity drives—1.2 and 1.6 GB drives are the bestsellers today. Top performers are Quantum Fireball, Western Digital Caviar and Seagate Decathlon drives.

**CD-ROM drives:** Apparently, the 6x and 8x CD-ROM drives are not worth it if you are just playing games. Most games are optimized for 2x models, which are the largest share of the market right now. Working with large databases, full-motion video files, or large Photoshop files can justify the purchase of faster CD-ROM drives.

**Multiprocessors and Pentium Pro:** Leave these until next year, when Windows NT becomes Microsoft's new baby. Both items need true 32-bit applications that are written specifically to take advantage of these new technologies. Look for MMX chip sets to show up late in the year, which will breathe new life into the Pentium.

### Oops!

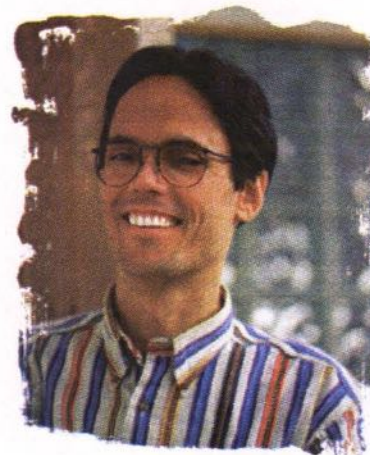
If you buy all the stuff I have listed above, you are back up to spending over \$3,000 for your computer. Oh well, you really will have a very powerful system when all is said and done. One last thought on the topic: a computer system is only as good as its weakest link. I usually include the carbon-based unit in front of the monitor in my description of what constitutes a system.

Damn, this is just like the radio. I just get going and I am out of time/space. Time for a commercial.

People often give us grief these days about not being able to find a copy of *The Computer Paper*. The problem seems to be that when we started our publication almost nine years ago, the number of people interested in computers was perhaps 10 to 15 percent of the population. Today the market research people tell us that every second household has a computer. We have attempted to deal with the issue by gradually increasing our circulation. We have to be careful with that because if we increase too much, our ad rates (our sole support, because we are a free publication) have to go up. Many of our core advertisers have been facing fierce competition in recent years.

Another approach has been to launch sister publications in the larger markets. Towards that end, we purchased *Toronto Computes!* three years ago and have launched *Canada Computes!* and *Quebec Micro!* These publications come out two weeks after *The Computer Paper*, and effectively make our publications biweekly, but it still is not enough.

So what is the answer for someone who wants a guaranteed copy of our publications? Buy a subscription. I have always been the last person





**Another take on digital cameras**

I read with interest about the digital cameras (TCP, June 96). However, I use a dirt-cheap alternate product: the Snappy. Since the most of us have a camcorder, the picture quality of those digital cameras isn't that great anyway, why not save a bundle? All one has to do is connect the Snappy to the printer port, install the software and connect the camcorder to the Snappy.

Joseph S. Berger

*DT replies:* Good point, the Snappy sells in Canada for about \$300, less than half the cost of the least expensive digital camera. The catch, of course, is that if you don't already have a camcorder, you'd have an additional expense.

For readers who don't know, the Snappy is a video frame grabber that allows a user to capture images from a video source—a camcorder, for example—and loads them into a computer as still images. We know of one Victoria, B.C.-based journalist/Web designer who covers the Indy race car circuit and the annual Swiftsure yacht race, 8 mm camcorder in hand, and uses the Snappy to create still images for his Web page. You can check the site out at [http://www.com/hi\\_tech](http://www.com/hi_tech).

**Network printer review unfair**

Your review of network printers could not have been more timely from my point of view as I have been asked by my department to select a network printer capable of servicing a large workgroup of 20 users. I too have done my homework and determined that our best choice would be either the Xerox 4520 or the HP LaserJet 5Si MX. Imagine my surprise when I discovered that you had chosen the Xerox over the HP and mostly due to price. In fact the price you mentioned for the HP absolutely astounded me.

On closer examination it became obvious what you had done: you had compared an HP printer loaded with options to a Xerox base model. Let's set the record straight: the HP 5Si MX weighs 99 lb. (44.5 kg) not 300 lb. (135 kg). It does not come with the 2,000-sheet input tray nor the multibin mailbox which you included in your estimates of weight and cost. It does come with three paper trays, two of which handle all sizes of paper, to 11"x17" and one of which is multipurpose for special media.

**From the editor**

Continued from page 6

to try to sell subscriptions. Why pay when you can get it for free, and when getting it through the mail can mean up to a 10-day delay in receiving the paper? The reality today, though, is that many will miss issues if they rely on the old tried and true method. If you fall into this category of reader, and you want to make sure you get your copy, please consider spending \$24.95 to get a one-year, 12-issue subscription.

To sweeten the subscription deal a bit, this month we are giving away a copy of The Stereographic Screensaver from VisionFind to the first 500 people who respond to this offer. This software is a twist on the popular stereographic images. The screen savers work the same way as the images that you find for sale as books or posters in malls and art shops. In order to see the 3D effect you must learn to set your point of focus behind the actual image. The back-lighting effect that you get from displaying the images on a computer monitor gives the images contrast and dimension that you cannot get from a regular print. So stunning are the images that you will want to drag friends and family to the computer to have a look. Check out our subscription ad on page 82.

See you at Comdex Canada, July 10-12, at the Metro Convention Centre in Toronto. Our booth should be at the top of the escalators in the main Convention Centre.

Enjoy the issue.

Douglas Alder  
Editor/Publisher

It also comes with a network interface card which the Xerox does not and comes with more standard memory than the Xerox. Both are important when you consider that these are classed as departmental (i.e., large workgroup) network lasers. The base HP 5Si MX can be found in the Montreal area for \$5,650.

The real point of my diatribe is that I depend on informed opinion to help me to make informed choices. In this particular case I knew enough to spot your mistake, what if I had been looking to buy a product that I knew nothing about? In future, please compare apples with apples.

Guy Rimmer, McGill University, Montreal

*SH replies:* I'll do my best to address each of the points you raised, in the order in which they were raised.

As far as the weight of the HP is concerned, yes, you are correct in that it weighs 99 lb. (44.5 kg). However, the 300 lb. (135 kg) we stated was "as tested," including all the various options. You are also correct in stating that it does not come standard with a 2,000-sheet input tray, nor the multibin mailbox option, but the fact is, we never said it did. If you take a look at the chart and the writeup, you'll notice that it states that these are both options and were not included in the price of \$6,863. They were included in the total weight, which, as I said before was 300 lb. (135 kg) "as tested."

We did make an error though, in stating that the standard input capacity on the 5Si MX was 500 sheets, but in fact, it is actually 1,100. You also mentioned that the HP comes with more memory as standard than the Xerox. Quite true, however, with RAM prices being as low as they are, you could easily upgrade the Xerox to the same 12 MB for an additional \$50 with the purchase of a 4 MB SIMM module.

The same goes for the network interface, which can also be added, and the price would still be well below that of the HP. Note too, that the Xerox has a print resolution of 800x800, which is something that you cannot upgrade on the HP. And although the Xerox is 4 pages per minute (ppm) slower than

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the HP, it still has a print speed of 20 ppm. As far as the price goes, I've just concluded a conversation with a representative from HP, and she assures me that the list price of the unit was, and still is \$6,863.

When it came to picking our winners, we leaned more favorably towards the Xerox, but this does not mean that the HP isn't better suited for your particular application and environment.

#### Did Marilyn like her men that old?

Hi, I really like *The Computer Paper*—excellent blend of technical, reviews, how things work, ads, etc. But in the May '96 review called "Hello, goodbye Norma Jean..." by Ross MacDonald,

there's a mistake. Marilyn was married to the playwright Arthur Miller, not the author Henry Miller. Arthur, of course, wrote such plays as *Death of A Salesman* and *The Crucible*, whereas Henry wrote the sexy stuff such as *Tropic of Capricorn*. Henry Miller would have been old enough to have been Marilyn's grandfather.

Seymour Trieger, via Internet

#### First it worked, now it doesn't

I have a i486sx33 motherboard that is giving me a headache. At first, it worked fine. Later, it only worked when it wanted to. Now, it doesn't work at all.

When I turn on my computer, the power-sup-

ply fan starts, the hard drive spins up and the turbo LED also goes on—but the monitor remains completely blank.

Therefore, I can conclude that power is definitely being supplied to the motherboard from the power supply, but why is it that the regular boot-up procedure (RAM, keyboard, and video checks, and further execution of operating system) does not occur? Remember, it used to do this once in a while, then became worse until it just did not work anymore—so it can't be dead! Besides, power still flows through it. Any advice will be greatly appreciated.

Jimmy Boutin, Toronto

SH replies: If you have power, and are not seeing anything on the screen, it sounds a lot like either a loose connection, or a faulty component. Are you getting any beeps from your PC speaker? If you are, then it's just a matter of looking up what the sequence of beeps mean for your particular make of BIOS, and taking it from there.

However, if that is not the case, then I would start by checking to make sure that your video card and RAM are properly in place. If you try this and you're still having problems, my next recommendation would be to swap components one at a time until you isolate the problem, or can at least conclude whether or not it's a problem on the motherboard or with an actual component.

Start by removing all the cards from your slots, except for your I/O, and video cards. Power on the system, and see if anything different happens. If there is no change, swap your video card with another, and see what occurs, then proceed with different SIMMs. If none of this changes anything, then it would probably be a fault on the motherboard itself, and should be looked at by a technician.

#### Where art thou, UART?

I am a user of an external 14.4K modem and I have a 8250 UART chip. I am told that if I want my modem to run at full speed, I gotta have a 16550 UART chip. I am having trouble finding one, and someone told me that nobody sells just a UART chip anymore. Any suggestions?

"Donkey Kong," via Internet

SH replies: You can buy the 16550 on its own, but I would recommend you go out and buy a whole new I/O card with the 16550 right on it. It'll only cost you a few dollars more, with EIDE cards running for \$30-40 complete with the UART.

#### Team OS/2er cheers

I was pleased to see an article written about the forthcoming release of IBM's new and improved OS/2. As a faithful OS/2 user for the last three years, I have developed some loyalty to the "Big Blue's" operating system. Most major publications have questioned the future of OS/2, while you report on it. Thank you once again. It just goes to prove that it is brighter on the other side of the window!

Brian J. Babiuk, East St. Paul, Manitoba

#### Upgrade chips: a maybe it is

In your May 96 issue, the articles "To P or not to P" and "Upgrading your computer" were very informative but had opposing views on the Pentium upgrade for 486 computers. Recently, I have read about the CPU MAXimiser by Gainbery computer products. They say it can upgrade my 486SX-33 to 586-100. They said this upgrade costs \$139.99. Is it worth it? Help. A yes, no, or maybe will suffice for an answer as long as it's honest. Thanks for your time.

Eric Bergeron, via Internet

DT replies: We have a review of Gainbery's "586" upgrade chip for portable computers in this issue, but we haven't yet tested the desktop computer upgrade product. So, until we've had a chance to review it, a maybe will have to do.

#### You can try this at home

I am writing regarding your article about affordable removable storage (see "Iomega's Zip versus SyQuest EZ135" in the June '96 issue). I just wanted to let your readers know that there is another viable application for these devices besides backup. I own the Zip and EZ135 drives, and I love both of them. Contrary to recommendations of using the drive for backups only, I use the drives as though they were hard disks. True, they are slower than most drives, but I can settle for slower speeds if it means I can save (a LOT of) space on my hard disk. I have Microsoft Office 95 installed on one EZ Disk, and Corel Draw 6.0 on another, and so far have had absolutely no problems with either of them. In addition, I run Netscape off a Zip disk and have, as of yet, had no problems with it. The cache directory can get quite large, and it is nice to know that it is not filling the hard drive.

Aaron Perl, via the Internet

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## Canada is top importer of American electronics

WASHINGTON, D.C. (NB) — The United States exported more than US\$125 billion worth of electronics products in 1995, yet still showed a US\$28 billion trade deficit between electronics exports and imports, according to recently released figures from the Electronic Industries Association (EIA).

The association's analysis of Department of Commerce export data indicates Canada was America's biggest market, importing more than US\$19.3 billion of U.S. electronic products in

1995. This was an increase of 19 percent over its 1994 imports worth US\$16.2 billion.

Japan ranked second in export markets for U.S. electronic products, EIA vice-president Mark Rosenker told Newsbytes.

Japan bought more than US\$13.6 billion of electronic products from the United States in 1995, a 33 percent increase over 1994's total of US\$10.3 billion, Rosenker said.

Other major importers in the US\$125 bil-

lion worth of electronic products U.S. electronics companies sold overseas last year include: the United Kingdom, US\$9.1 billion; Mexico, US\$8.8 billion, and Singapore, US\$7.4 billion.

Although Japan was the number two importer of U.S. electronics goods, it led in exports to the United States, Rosenker said.

At US\$9.6 billion, Canada was the number seven in electronic goods exports to the U.S. □

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# ULTINET MIDTOWERS EVEN FASTER WITH 256K OR 512K PIPELINE CACHE

Insist on Ultinet's Triton chipset motherboard which runs up to 200 MHz. Others' slower systems with non-Triton chipsets use a 16 mb SIMM, giving you only 32-bit memory access & saving them money. Ultinet uses two 8 mb SIMMs for full 64-bit memory access.

## ULTINET PVT/M NOTEBOOKS WITH MULTIMEDIA & MORE



| PVT/M NOTEBOOKS W/PENTIUM® PROCESSOR (8 MB, 10.3" DSTN CLR) |        |        |        |
|---|--------|--------|--------|
| Hard Drive  | 520 mb | 810 mb | 1.3 gb |
| PVT/M IDX-75  | \$2482 | \$2590 | \$2874 |
| PVT/M IDX-100   | \$2538 | \$2679 | \$2930 |
| PVT/M IDX-120   | \$2617 | \$2758 | \$3009 |

### NOTEBOOK FEATURES

|                               | PVT/M  | PENTIMEDIA/CD          |
|-------------------------------|--|------------------------|
| CPU Options                   | P-75/100/120                                 | P-75/100/120/133       |
| Int. CPU L2 Cache             | 256k   | 256k                   |
| Base / Max RAM                | 8 mb / 40 mb                                 | 8 mb / 32 mb           |
| Local Bus Video RAM           | VLB 1 mb                                     | PCI 1 mb               |
| Max. Removable HDD            | Yes, 1.3 GB                                  | Yes, 1.3 GB            |
| Floppy Drive                  | 1.44 mb, HD                                  | 1.44 mb, HD            |
| DSTN Colour LCD               | 10.3", 640x480                               | 11.3", 640x480         |
| Ext. Monitor                  | simultaneous, 1024x768                       |                        |
| Ports                         | 1 parallel, 1 serial, 1 external, video port |                        |
| Two PCMCIA slots              | Type II & III                                | Type II & III          |
| SVGA, PCMCIA Drivers          | Included                                     | Included               |
| Pointing Device               | Pointing device                              | trackpad               |
| Battery Type                  | NiMH   | NiMH                   |
| Sound, Joystick & Audio Ports | 16-bit, Y, speaker/mic                       | 16-bit, Y, speaker/mic |
| 4XCD-ROM                      | optional external                            | built-in               |
| Carry Case, AC Adaptor        | Included                                     | Included               |
| Dimensions (inches)           | 11.3 x 10 x 2.4                              | 11.7 x 9.9 x 2.2       |
| Battery Life (hours)          | 2 - 4 hours                                  | 2 - 4 hours            |



Ultinet  
Performance Package  
w/Pentium® 100  
Awarded Editor's Choice  
The Computer Paper  
December, 1995

from The Computer Paper, Dec 1995...

The two machines (Pentium 75 and 100) from Ultinet leave the competition dead in the water. Both place very high in their respective categories on price & performance...  
Irrespective of the fact that the price includes a 15" .28dpi UVGA (1280x1024) monitor.

### BEWARE OF DUMMY CACHE

Tests were done using PC Magazine Winbench 96 tests with Windows 3.1 and 100 MHz Pentium CPUs installed. The same video card/hard drive & memory were used for the comparison. The regular 256k async cache motherboard was 25% faster than the one with writeback or dummy cache. Dummy cache was 2% faster compared to a board with no cache. Many suppliers use motherboards with write-back (dummy) cache. Always ask for motherboards with asynchronous or synchronous cache.

### PERFORMANCE BENCHMARKS

Generic Pentium TRITON motherboard, 256k writeback (dummy) cache = 157  
Ultinet, Pentium TRITON motherboard, 256k reg async industry standard = 196  
Ultinet Pentium TRITON chipset motherboard, 256k sync pipeline burst cache = 223

## THE PENTIMEDIA SERIES UNBEATABLE PORTABLE MULTIMEDIA



| PENTIMEDIA/CD NOTEBOOKS (8 MB RAM, 11.3" DSTN CLR) |        |        |        |
|--|--------|--------|--------|
| Hard Drive:  | 520 mb | 810 mb | 1.3 gb |
| DX-75, Pentium                                     | \$3244 | \$3391 | \$3588 |
| DX-100, Pentium                                    | \$3303 | \$3451 | \$3647 |
| DX-120, Pentium                                    | \$3385 | \$3533 | \$3729 |
| DX-133, Pentium                                    | \$3492 | \$3640 | \$3836 |

### NOTEBOOK UPGRADES & ADD-ONS

|   |           |
|---|-----------|
| Upgrade:  |           |
| Each mb of 70 ns fast RAM                                 | \$75      |
| Notebook with Pentium 10.3" DSTN to 9.8 active matrix LCD | \$415     |
| Notebook Pentimedia /CD 11.3" DSTN to 10.2" active matrix | \$515     |
| Add-on:   |           |
| MS-DOS 6.22, full OEM package disks and manuals           | \$59      |
| Windows 3.1 / Win. 3.11 with Wksp (OEM)                   | \$59/89   |
| Windows 95 full package on CD with manuals (OEM)          | \$135     |
| Extra Removable HDD case/external hard drive              | \$60/Call |
| PCMCIA 14.4 fax/modem (with notebook only)                | \$125     |
| PCMCIA 28.8 fax/modem (with notebook only)                | \$295     |
| PCMCIA Ethernet adaptor 10 BT                             | \$198     |
| PCMCIA SCSI adaptor                                       | \$389     |
| PCMCIA 28.8 Fax/Ethernet 10BT Combo                       | \$595     |
| External Double Speed CD-ROM (PCMCIA)                     | \$479     |
| External Quad Speed CD-ROM (PCMCIA)                       | \$625     |
| External Parallel 800 mb Tape Back-up                     | \$285     |
| Notebook Hard Drive Upgrades:                             |           |
| 520 mb  | \$323     |
| 810 mb  | \$476     |
| 1.3 gb  | \$875     |

### EVERY ULTINET COMPUTER PACKAGE INCLUDES

|                                   |   |
|-----------------------------------|---|
| CPU Options                       | DX-60 to 166 MHz Pentium® processor<br>DX-200 MHz Pentium Pro® processor              |
| Motherboard                       | 3 PCI, 4 ISA slots  |
| BIOS/ Chipset                     | Award PnP, Intel-Triton   |
| Cache                             | 256k or 512k 7ns sync dip cache   |
| High Performance                  | Yes, Triton chipset on P-100 to P-150   |
| Hard Drive & controller xfer mode | <11 ms, enh. ide M4   |
| HDD controller                    | PCI enhanced dual channel   |
| Floppy Drive                      | 1.44 mb   |
| Low radiation/energy monitor      | 14" or 15" .28dp SVGA   |
| Video Card                        | 1 mb PCI or ATI Mach 64   |
| Sound Card, Speakers              | true 16-bit sound card, 2 ext. speakers   |
| Enhanced keyboard & mouse         | Win95 104 enhanced, 400 dpi   |
| Case, power supply                | Enhanced digital midtower, 235Watt  |
| Serial/ Parallel Ports            | 2x16550 enhanced serial, enh. parallel  |
| Multimedia Option                 | 16 bit sound, 4X or 6X CD   |
| CDs Included                      | 30 titles (educational & entertainment including Comptons Encyclopedia)               |
| Warranty                          | 2 years parts & labour system warranty<br>5 years parts & labour motherboard warranty |

### Why Buy Ultinet?

- 12 years' reputation for best quality, service and value, with over 42,000 systems sold.
- First in Canada to recognize importance of and ship large quantity of TRITON-based fast Pentium systems.
- Our own 40,000 sq. ft. sales, support and manufacturing plant, conveniently located at 401/Dufferin.
- Easy lease to own available for 1-3 yrs @ \$37/1000.
- All systems configurable to your exact needs.
- Compare! Our volume buying power saves you at least 9% without compromising quality or service.
- 24 hour regular and automated sales and tech support.
- Our P100-P166 system motherboards use Intel's latest Triton chipset with VRM & COAST pipeline slot. Unlike our competitors we use genuine 256k & 512k pipelined burst mode cache. We do not use dummy surface-mounted write back cache to save costs & lose 25% system speed!  
Our industry-standard TRITON motherboard is one of the best & fastest with 5 year Parts & Labour warranty, first to support up to 200 MHz clock speeds. This motherboard was featured in our 75MHz & 100 MHz Pentium systems, that according to The Computer Paper "leave the competition dead in the water."

### ENTRY LEVEL PERFORMANCE PACKAGE

|   |        |
|---|--------|
| 16 mb 60ns RAM (true 64-bit with 2x8mb SIMMs), 1.09 GB enh. IDE HDD, 4xCD-ROM, true 16-bit surround sound, 104 enh kybd, 1 mb 32-bit PCI video, FS MPEG & mouse, fast 256/512k pipeline cache boosts speed by 13-17%, multimedia speakers |        |
| P-75 Pentium® processor   | \$920  |
| P-100 Pentium® processor 512k pipeline  | \$1006 |
| P-120 Pentium® processor 512k pipeline  | \$1083 |
| P-133 Pentium® processor 512k pipeline  | \$1167 |
| P-150 Pentium® processor  | \$1323 |
| P-166 Pentium® processor 512k pipeline  | \$1534 |
| P-Pro 200 Pentium® processor  | \$2793 |
| Add 14" Daytek .28dp monitor to the above   | \$314  |
| Add 15" Daytek .28dp digital monitor to the above   | \$447  |
| 1 mb PCI video to ATI Mach 64 1mb DRAM (OEM)  | \$91   |

### PERFORMANCE PACKAGE

|  |        |
|--|--------|
| 16 mb (true 64-bit RAM with 2x8mb SIMMs) 60ns RAM, 1.09 GB enh IDE HDD, 4xCD-ROM, 16-bit surround sound, 104 enh kybd, ATI Mach 64 1 mb video full screen MPEG, fast 256/512k pipeline cache boosts speed by 13-17%, 30 CD titles, Comptons Ency., multimedia speakers, 15" .28dp NI digital monitor |        |
| P-75 Pentium® processor  | \$1373 |
| P-100 Pentium® processor 512k pipeline   | \$1460 |
| P-120 Pentium® processor 512k pipeline   | \$1537 |
| P-133 Pentium® processor 512k pipeline   | \$1621 |
| P-150 Pentium® processor   | \$1777 |
| P-166 Pentium® processor 512k pipeline   | \$1987 |
| P-Pro 200 Pentium® processor   | \$3247 |
| Upgrade to Plus Package add  | \$225  |
| Upg to Wavetable 32 sound, 6xCD-ROM, 160W premium speakers, Wintrack 95 kybd. (intuitive trackball productivity at your fingertips, save time, no taking hands off keyboard)   |        |

### UPGRADE PERFORMANCE TO POWER PACKAGE

|   |       |
|---|-------|
| Incl. 17" .26dp Intelliview 17 NI monitor, ATI Mach 64 2 mb | \$472 |
| Incl. 17" .26dp MAG 1795 NI monitor, ATI Mach 64 2 mb       | \$591 |

### SPECIAL EDITION PACKAGE

|  |        |
|--|--------|
| 16 mb 72pin 60ns RAM, 1.7 GB enh. IDE HDD, 17" .26dp Intelliview NI UVGA monitor, ATI Mach 64 2 mb DRAM, FS MPEG, 6xCD-ROM, true 16-bit SRS sound w/Wavetable 32 sound, enh Keytrack 95 kybd, 160 Watt premium speakers, 512k fast 7ns pipeline cache, 30 CD titles, Comptons Ency, 28.8 V/FX blaster, hi-quality mike |        |
| P-100 Pentium® processor 512k pipeline   | \$2470 |
| P-120 Pentium® processor 512k pipeline   | \$2547 |
| P-133 Pentium® processor 512k pipeline   | \$2631 |
| P-150 Pentium® processor 512k pipeline   | \$2787 |
| P-166 Pentium® processor 512k pipeline   | \$2997 |
| P-Pro 200 Pentium® processor   | \$4257 |

### MIDTOWER SYSTEM UPGRADES:

|   |              |
|---|--------------|
| IDE 1.08 GB enh. HDD to 1.2 GB /1.7 GB/2.5 GB HDD             | \$35/110/195 |
| IDE 1.08 GB enh. HDD to SCSI 1.1 GB/2 GB HDD                  | \$88/578     |
| IDE 1.08 GB enh. HDD to SCSI 4 GB HDD                         | \$1098       |
| 256k to 512k synchronous pipeline burst cache                 | \$40         |
| Upgrade to Wintrack 95 keyboard with built-in trackball       | \$65         |
| Upg. regular 16-bit to WaveTable 32 Voice sound card          | \$31         |
| Adaptec 2940 PCI SCSI controller with cable and software      | \$289        |
| Adaptec 2940W PCI SCSI controller with cable and software     | \$410        |
| 15" to Mag DX15/95 15" .28dp NI UVGA monitor                  | \$125        |
| 15" to Mag DX15T 15" .25dp NI UVGA monitor                    | \$189        |
| 15" to Sony 15" 15SFI 15" .26dp NI UVGA monitor               | \$319        |
| 15" to Intelliview DH17 17" .26dp NI UVGA monitor             | \$422        |
| 15" to Mag DX17/95 17" .26dp NI UVGA monitor                  | \$541        |
| 15" to Mag DX17T 17" .25dp NI UVGA monitor, Trinitron tube    | \$675        |
| 15" Daytek to .28 dp Intelliview 15" OSD/MAG1595              | \$90/125     |
| 15" .28dp Daytek monitor to 17" .28dp Daytek                  | \$365        |
| 15" .28dp Daytek mtr. to 17" .26dp Intelliview 17" OSD        | \$422        |
| 15" .28dp Daytek to 17" .26dp Mag Innovation DX1795           | \$541        |
| ATI Mach 64 1 mb DRAM to 2 mb DRAM (OEM)                      | \$50         |
| ATI Mach 64 2 mb to Matrox Millennium 2 mb WRAM (OEM)         | \$247        |
| 16 to 32 mb RAM (4 pcs 8 mb SIMMs/2 pcs 16 mb)                | \$157/324    |
| 5 to 160W speakers (AC adaptor, bass/ treble/volume controls) | \$89         |
| 4xCD-ROM TO 6xCD-ROM / 8xCD-ROM                               | \$49/139     |

### MIDTOWER SYSTEM ADD ONS:

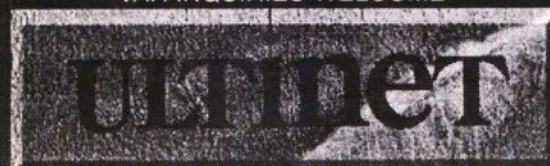
|   |           |
|---|-----------|
| MS Home Bundle (Encarta, Dangerous Creatures, Works, Entertainment)                                     | \$110     |
| Generic 14.4/28.8 voice/fax/modem   | \$76/182  |
| USR 14.4 fax/modem / 28.8 fax/modem   | \$145/269 |
| USR 28.8 voice/fax/modem  | \$289     |
| Cardinal 14.4 voice/fax/modem   | \$145     |
| Cardinal 28.8 voice/fax/modem   | \$254     |
| VFX Blaster 28.8 DSVD Voice/Fax/Modem w/speakers w/wave table & booming realistic surround effect sound | \$225     |
| 800 mb TRAVAN internal tape back-up drive   | \$248     |
| TV Tuner Card (watch TV on your monitor)  | \$145     |

### MOTHERBOARD SPECIALS

|   |       |
|---|-------|
| 60/66 MHz, 256k cache Acer chipset                                | \$110 |
| <b>TRITON CHIPSET MOTHERBOARD</b>                                 |       |
| 75-200 MHz, parallel port, 2x16550 UART, Enhanced IDE, MODE 4     |       |
| \$145 (256k sync pipeline cache) \$169 (512k sync pipeline cache) |       |

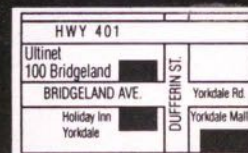
|                       |                         |
|-----------------------|-------------------------|
| <b>MEMORY</b>         |                         |
| 8 mb 72-pin SIMM \$78 | 16 mb 72-pin SIMM \$179 |
| <b>PENTIUM CPUS</b>   |                         |
| P-100 \$187           | P-120 \$258             |
| P-133 \$352           | P-150 \$499             |
| P-166 \$689           |                         |

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# WHAT'S NEW

**A sim game with soul** • Many simulation games use real-world settings such as cities, theme parks and civilizations. LucasArt's new Afterlife simulation game turns this idea on its head as players assume the role of the enchanted regional manager of their own piece of the ethereal realm.

As souls move to their final resting places, the player tallies their good and bad deeds, sending them to their expected rewards. Players have to manage the arrival (and occasional departure through reincarnation) of souls as they develop areas for the seven deadly sins and their opposite virtues.

The expectations and needs of recently deceased souls have to be accommodated as efficiently and profitably as possible.

Happy souls lead to greater development with few complications. If they are not happy, chaos ensues and everything goes to you-know-where.

Disasters include Disco Inferno, where a large Travolta-esque character destructively dances across the screen, to the icy oblivion of Hell Freezing Over.

Players are rewarded for souls successfully processed with Pennies from Heaven, enabling further expansion in the afterlife. With billions of souls to keep track of, Afterlife does not subscribe to any one belief system, just the ones that affect gameplay.

Initially, Afterlife will be available only for Windows 95, with a Macintosh version to be released later. —KS-R

Contact: LucasArts Entertainment Company, Tel: 415-472-3400



## Alchemical graphic tools updated for Windows 95

Alchemy Mindworks, based in Beeton, Ont., has long been

helping people deal with image-file format compatibility—or the lack thereof.

Its popular Graphic Workshop for Windows has recently been updated for use on Windows 95 machines, taking full advantage of the speed of 32-bit processing.

The updated program lets Windows 95 users convert image files among the most popular formats, so they can be traded between such programs as Windows Paintbrush, PageMaker, MS Word, WordPerfect, Corel Draw, Deluxe Paint and many others.

Over 30 common image-file formats are supported. Users can view thumbnail images of their pictures, and a keyword-search function makes finding graphics among large collections of image files fast and easy. Users can also display slide shows of images, rotate, dither, scale, and flip images, and other functions typically reserved for more expensive graphics packages.

Alchemy Mindworks' new GIF Construction Set for Windows

enables users to create simple animated graphics for the World Wide Web without having to write complicated Java programs.

The program takes advantage of a little-known feature of the GIF-89 specification, allowing for animation contained within a single GIF file. Of interest mainly to Web developers, in addition to creating looping animations, users can also use the program to make transparent GIF files, add text to images, or use it as an add-on application for their Web browser.

Graphic Workshop for Windows 95 costs \$40, and GIF Construction Set for Windows costs \$20, plus \$5 shipping. Shareware versions of both programs are available from the company's Web site.

Contact: Alchemy Mindworks, Tel: 800-263-1138. Web site: <http://www.mindworkshop.com/alchemy/alchemy.html>

## Search and Replace utility great for Web authors

Web authors know how frustrating it can be to change all of the hypertext links within a Web document—never mind an entire Web site. It takes a lot of time to search each page and change hypertext links to a new address, or alter other elements.

Now Web builders have Search and Replace for Windows 95/NT, an easy-to-use utility that searches multiple files/directories for words or phrases, then replaces them with another.

The program supports regular expressions (egrep-style), binary characters and blocks containing multiple lines to search and replace.

Search Results can be edited in context (several lines before and after), and files can be opened with associated viewers. Search results can be output to file (or printer), or sent to the Clipboard.

Dates and times of files can also be altered (to any other date and time). Search results are color coded, and many options including backups, logging, and file viewer, are also available.

While not designed specifically for Web authors, the program makes changing large groups of links and GIF-file references easy. It is also handy for people who have to make global changes to large numbers of documents, and to programmers.

It is available for \$30, or \$26 when ordered via e-mail. A Windows 3.1x version is included at no additional cost. —KS-R

Contact: Funduc, E-mail: [funduc@sprynet.com](mailto:funduc@sprynet.com) Web site: <http://home.sprynet.com/sprynet/funduc>

## AST announces under-\$1,000 PC

AST Computer Inc. in the United States is offering a full Windows 95, multimedia-capable PC system for under US\$1,000.

According to AST, the Wal-Mart retail chain will begin selling a complete AST system consisting of a 14" SVGA monitor, 486 DX2/66 MHz-based PC with Windows 95, 8 MB of

RAM, 540 MB hard drive, 4x CD-ROM drive, SVGA graphics, and 16-bit sound.

Although the 486 processor has pretty much disappeared from the mainstream PC market, the system released by AST is capable of running virtually all current home productivity, education and entertainment software, at reasonable speed.



a \$500 computer is pretty much bunk because consumers don't want a "de-featured" computer.

Rather, he says, AST believes there is more market potential for a cost-reduced but still highly capable entry-level PC.

The recent steep declines in the cost of key components, including CD-ROM drives, RAM, hard drives, and 486 processors, have made it possible to reduce prices drastically.

The introduction of the under-\$1,000 PC is one of a series of initiatives AST is undertaking world wide as part of its revitalization effort, Diery said.

Although the most recent quarterly results indicated a \$115-million loss, and related job losses, Diery believes AST is over the worst of its troubles.

He said AST has radically reformed its speed of product development, and its control over unsold inventory.

Diery said the relationship with Samsung, which now has a controlling interest in AST, means AST can leverage Samsung's buying power for better prices and access to components, such as LCD screens, RAM and disk drives.

Contact: AST, Tel: 800-876-4278 or 905-507-3278. Web site: [www.ast.com](http://www.ast.com)

## Royal Ontario Museum Web site cool, not cold

Three months after opening its Web site to generally favorable reviews, Toronto's Royal Ontario Museum (ROM) announced that it has been visited by more than 85,000 Web-crawling dinosaur and archaeology buffs, and has netted five online awards.

The ROM site was named Canadian Cool site of the Day on Jan. 19, four days after its launch, and was designated "Top 5% of the Web" (an accolade the TCP's Web site has also shared—check us out at [tcp.ca](http://tcp.ca)) by POINT, a major Web index service.

"This museum site is a pleasant departure from the let's-put-our-free-visitors'-pamphlet-online motif used by many similar sites. Instead, this art and science museum uses the Web as a separate but complementary part of the museum itself, which is exactly as it should be," according to POINT.

Contact: Royal Ontario Museum, Web Site: [www.rom.on.ca](http://www.rom.on.ca)

## North Surrey Secondary Web site wins International CyberFair award

North Surrey Secondary took second place in their category at the International School CyberFair '96—a global competition celebrating the power of online communications to share and unite students in their communities.

Participating students created a Web site that included information about businesses and organizations in their area—which is one of Canada's fastest growing communities. The goal of the Web developers was to showcase their new "high-tech" school and the developmental directions their community is taking.

As participants in a pilot program called Information Technology Management, the students were encouraged by their ITM mentor, David Penberg, to create the site and enter the CyberFair.

The students—Salim Virani, Richard Workman, Casey Yee, Laura Cuzzens and Jeff Peter—participating are computer application students who assist staff and students with computer/technology related concerns.

The award ceremony, broadcasted on the Internet, was attended by over 10,000 students from 360 schools representing 30 countries. The International Schools CyberFair '96 is sponsored by MCI and Cisco Systems, and is managed by the Global SchoolNet Foundation.

Contact: North Surrey Secondary's winning Web site: <http://cyberfair.gsn.org/nss/nsshome.htm>



## Surf and feed at Millenium Bridge

If you like your scones with a bit of Web sauce, or want to check your e-mail over a latte, check out Vancouver's latest Internet cafe. Located at 519 Davie (at Seymour), Millenium Bridge offers a selection of eats, beverages, and 10 Internet terminals (eight PCs, two Macs).

Use of terminals costs \$5 an hour, and you can set up an e-mail account for \$5 per month. The cafe is open 8 a.m. to 11 p.m. seven days a week.

Contact: Also check out the cafe's Web page: [www.van-net.com](http://www.van-net.com)

## Rogers creates virtual gallery

NB — Rogers Communications Inc. is putting up a virtual art gallery on its Web site. The communications firm, with interests in long-distance telephony, mobile communications, cable television, and print media, said 11 Canadian art museums will take part in the artWAVE@rogers project. Works from current exhibitions of Canadian art will be displayed online starting in July, on Rogers' Web site. The participating museums will also post information about their own events. They are the Art Gallery of Nova Scotia, the Musee d'art contemporain de Montreal, the National Gallery in Ottawa, the Art Gallery of Ontario and The Power Plant in Toronto, the Art Gallery of Hamilton, the London Regional Art & Historical Museum, the Winnipeg Art Gallery, the Edmonton Art Gallery, the Glenbow Museum in Calgary, and the Vancouver Art Gallery.

Contact: Rogers' Web site: <http://www.rogers.com>

**Best Wishes**, a 1995 work by artist Michael Buckland, is part of the Power Plant Gallery's Beauty #2 exhibition, which can currently be viewed through Roger's Virtual Gallery.



## Silk Road CD-ROM first of Digital Journey series

VANCOUVER, B.C. (NB) — DNA Multimedia Corp. has announced The Silk Road, a multimedia tour of Asia on CD-ROM. The CD-ROM developer said this will be the first title in a new Digital Journey series.

The CD-ROM is meant to simulate a journey along the Silk Road, an ancient trading route into Asia. The presentation follows the caravanserai that traveled the road, with a number of parallel journeys on historic and modern-day routes in the region. The locations covered include the markets of Kashgar, the Taklamakan desert, and the Karakoram highway.

A Windows or Macintosh operating system is required to run the disc, which sells for \$59.95.

The material on the disc was put together by a team of artists, photographers, historians, writers, anthropologists, and musicians, Eleni Tsapraillis, of DNA Multimedia, told Newsbytes.

It includes games that let the user do such things as construct a yurt (a traditional type of house found in the region) and take a test of knowledge at the University of Dunhuang.

Other CD-ROM titles from the Vancouver company include Klondike Gold and Everything in States.

The Silk Road is now shipping, and can be ordered directly from DNA, Tsapraillis said. The company is "currently confirming our major distribution channels," she added.

Contact: DNA Multimedia, Tel: 604-730-0306. Fax: 604-732-7331. Web site: <http://www.dna.bc.ca>





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COMPLUCENTRE





## Triton II Game Station

Intel Pentium Processor with Fan (support up to 200MHz)  
Triton II 430VX chipset PCI/ISA Main Board w/256KB Pipeline Cache  
8MB-70ns EDO Performance-Enhanced DRAM exp. to 128MB  
1.44MB Floppy Drive  
1.08GB Fast IDE Hard Drive (Mode 4)  
PCI Enhanced IDE Cont. w/ 2x16550 Serial, 1xBi-Directional Parallel  
PCI ATI Xpression 64-bit Accelerator w/1MB DRAM (exp. to 2MB)  
Creative Labs Sound Blaster 32 PnP with speakers  
6x Speed EIDE CD-ROM  
Sceptre 15" Non-Int. Low Rad. SVGA Monitor PnP  
Mid-Tower Case with CSA Power Supply  
104-keys Windows 95 Keyboard, 3 Button Mouse  
2 Year Parts & Service Warranty

**200MHz Available!**

**EDO MEMORY INSTALLED**

|        |         |
|--------|---------|
| 75 MHz | \$1,695 |
| 100MHz | \$1,760 |
| 120MHz | \$1,840 |
| 133MHz | \$1,940 |
| 150MHz | \$2,075 |
| 166MHz | \$2,300 |

## Triton II Station Plus

Intel Pentium Processor with Fan (support up to 200MHz)  
Triton II 430VX chipset PCI/ISA Main Board w/256KB Pipeline Cache  
8MB-70ns EDO Performance-Enhanced DRAM exp. to 128MB  
1.44MB Floppy Drive  
1.08GB Fast IDE Hard Drive (Mode 4)  
PCI Enhanced IDE Cont. w/ 2x16550 Serial, 1xBi-Directional Parallel  
Support up to 4 IDE Hard Drive, Max. Transfer Rate up to 16MB/Sec  
Integrated 8 x 32-bit buffer for PCI IDE Burst Transfers  
PCI ATI Xpression 64-bit Windows Accelerator with 2MB DRAM  
Sceptre 15" Non-Int. Low Rad. SVGA Monitor PnP  
Mid-Tower Case with CSA Power Supply  
104-keys Windows 95 Keyboard, 3 Button Mouse  
2 Year Parts & Service Warranty

**200MHz Available!**

**EDO MEMORY INSTALLED**

|        |         |
|--------|---------|
| 75 MHz | \$1,425 |
| 100MHz | \$1,490 |
| 120MHz | \$1,570 |
| 133MHz | \$1,670 |
| 150MHz | \$1,805 |
| 166MHz | \$2,030 |

## Monthly Special !!

### SIMM Memory

|                       |          |
|-----------------------|----------|
| 4MB 70ns 72-Pin SIMM  | \$ 50.00 |
| 8MB 70ns 72-Pin SIMM  | \$ 95.00 |
| 16MB 70ns 72-Pin SIMM | \$190.00 |
| 1MB 70ns 30-Pin SIMM  | \$ 20.00 |
| 4MB 70ns 30-Pin SIMM  | \$ 79.00 |

### Pioneer

Pioneer 4X Quad Speed Internal IDE CD ROM Drive PnP

Limited Quantity !! **\$65.00**

### Zoltrix

14,400bps Internal Voice/Fax/Data Modem w/Speaker Phone

Limited Quantity !! **\$59.00**

## Creative Labs \$470

**8X Discovery Kit** Includes 12 Multimedia Titles  
Sound Blaster 32 PnP & 3D Stereo Technology  
Full Throttle, Star Wars Dark Forces SE, Cyberia, Grolier Encyclopedia 96 and more..

## IDE Hard Drive Special !!

|                      |                   |
|----------------------|-------------------|
| 1.6GB \$325          | <b>HARD DRIVE</b> |
| ENHANCED 850MB \$246 |                   |
| IDE 1.08GB \$270     |                   |
| 1.2GB \$285          |                   |

## Free Installation!

|   |                 |
|---|-----------------|
| PCI Main Board w/256 KB Cache w/486 DX4100MHz | w/486 DX5133MHz |
| <b>\$180.00</b>                               | <b>\$195.00</b> |

## Power Station

**NEW**  
Features:  
Intel Pentium CPU with Fan  
Triton chipset PCI/ISA  
Main Board w/256KB Pipeline Cache  
8MB-70ns Fast Page DRAM exp. to 128MB  
1.44MB Floppy Drive  
850MB Fast IDE Hard Drive  
PCI Enhanced IDE Controller  
PCI S3 Trio 64 Windows Accelerator with 1MB DRAM (expandable to 2MB)  
2x16550 UART Serial, 1 Bi-Directional Parallel  
14" Non-Int SVGA Monitor .28mm dp  
Mid-Tower Case with 230W CSA Power Supply  
104-keys Win95 Keyboard, 3 Button Mouse  
2 Year Parts & Service Warranty

## PENTIUM

|        |         |
|--------|---------|
| 75MHz  | \$1,110 |
| 100MHz | \$1,175 |
| 120MHz | \$1,255 |
| 133MHz | \$1,355 |

## Power Station Plus

**64 Bit MPEG**  
Features:  
Intel Pentium CPU with Fan  
Triton chipset PCI/ISA  
Main Board w/256KB pipeline cache  
8MB-70ns Fast Page DRAM exp. to 128MB  
1.44MB Floppy Drive  
850MB Fast IDE Hard Drive  
PCI Enhanced IDE Controller  
PCI Cirrus Logic 5446 Windows Accelerator with 1MB DRAM (MPEG Playback)  
2 16550 UART Serial, 1 Parallel & 1 Game Port  
14" Non-Int SVGA Monitor .28mm dp  
Mid-Tower Case with 230W CSA Power Supply  
104-keys Win95 Keyboard, Speakers, Mouse  
Sound Blaster 16 Card, 4X Speed CD-ROM  
2 Year Parts & Service Warranty

## PENTIUM

|        |         |
|--------|---------|
| 75MHz  | \$1,280 |
| 100MHz | \$1,345 |
| 120MHz | \$1,425 |
| 133MHz | \$1,525 |

## Multimedia System

**4X CD ROM**  
Features:  
486 PCI/ISA Main Board  
P24T upgradable w/256KB External Cache  
4MB-70ns Fast Page DRAM exp. to 128MB  
1.44MB Floppy Drive  
850MB Fast IDE Hard Drive  
PCI Enhanced IDE Controller  
PCI S3 Trio 64 Windows Accelerator w/1MB  
2 x 16550 Serial, 1 Parallel & 1 Game Port  
14" Non-Int SVGA Monitor .28mm dp  
Mid-Tower Case with 230W CSA Power Supply  
104-keys Win95 Keyboard  
Sound Blaster 16 Card, 4x Speed CD-ROM  
3 Button Mouse & Stereo Speakers  
2 Year Parts & Service Warranty

## AMD 4 8 6

|             |         |
|-------------|---------|
| DX4-100MHz  | \$1,100 |
| DX4-120 MHz | \$1,110 |
| 5x86-75 Mhz | \$1,115 |

## Impression

**Best Buy PCI BUS**  
Features:  
486 PCI/ISA Main Board  
P24T upgradable w/256KB External Cache  
4MB-70ns Fast Page DRAM exp. to 128MB  
1.44MB Floppy Drive  
630MB Fast IDE Hard Drive (Enhanced Mode 3)  
PCI Enhanced IDE Controller  
PCI S3 Trio 64 Windows Accelerator with 1MB DRAM (expandable to 2MB)  
2 x 16550 Serial, 1 Parallel & 1 Game Port  
14" Non-Int SVGA Monitor .28mm dp  
Mini-Tower Case with CSA Power Supply  
104-keys Win95 Keyboard, 3 Button Mouse  
2 Year Parts & Service Warranty

## AMD 4 8 6

|             |       |
|-------------|-------|
| DX4-100MHz  | \$900 |
| DX4-120 MHz | \$910 |
| 5x86-75 Mhz | \$915 |

## Video Graphics Adaptors

|  |           |
|--|-----------|
| ATI Mach 64 Xpression PCI w/2MB DRAM           | \$160.00  |
| ATI Mach 64 Video Xpression PCI w/2MB DRAM     | \$196.00  |
| ATI Mach 64 WinTurbo VLB/PCI w/2MB VRAM        | \$330.00  |
| ATI Mach 64 Win Turbo VLB/PCI w/4MB VRAM       | \$550.00  |
| ATI 3D Xpression PCI w/2MB DRAM                | \$225.00  |
| Diamond Stealth 64 Video PCI 1MB/2MB DRAM      | \$175/210 |
| Diamond Stealth 64 Video 3200 PCI w/2MB VRAM   | \$345.00  |
| Diamond Stealth 64 Video 3240XL PCI w/2MB VRAM | \$355.00  |
| Diamond Stealth 64 Video 3400XL PCI w/4MB VRAM | \$585.00  |
| Diamond 3D Edge 2120XL PCI w/1MB DRAM          | \$330.00  |
| Diamond 3D Edge 3240XL PCI w/2MB VRAM          | \$499.00  |
| Matrox Millennium PCI 2MB/4MB VRAM             | \$360/525 |
| Cirrus Logic 5429 VLB w/1MB exp. to 2MB        | \$75.00   |
| Cirrus Logic 5446 PCI w/1MB exp. to 2MB (MPEG) | \$70.00   |
| Trident 9440 PCI w/1MB exp. to 2MB             | \$55.00   |

## Monitors

|   |           |
|---|-----------|
| Sceptre 14" N/L/R (1024x768, 28mmDP) PnP          | \$300.00  |
| Sceptre 15" N/L/R (1280x1024, 28mmDP) PnP         | \$465.00  |
| ADI 4V/LR 15" N/L/R (1280x1024, 28mmDP)           | \$540.00  |
| ADI 5V/LR 17" N/L/R (1280x1024, 28mmDP)           | \$899.00  |
| Mag DX1595 15" N/L (1280x1024, 28mmDP)            | \$525.00  |
| Mag DX1795 17" N/L (1280x1024, 26mmDP)            | \$935.00  |
| Mag DX17T 17" N/L (1280x1024, 25mm Trinitron)     | \$1040.00 |
| NEC XV15+ 15" N/L/R (1280x1024, 28mmDP)           | \$705.00  |
| NEC XV17+ 17" N/L/R (1280x1024, 28mmDP)           | \$1150.00 |
| NEC M500 15" 25mmDP Mask Pitch                    | \$810.00  |
| NEC M700 17" 25mm DP Mask Pitch                   | \$1230.00 |
| Princeton Ultra 17+ 17" N/L/R (1600x1280, 28mmDP) | \$865.00  |
| Sony 15SF2 15" N/L/R (1280x1024, 25mmDP) PnP      | \$675.00  |
| Sony 15SX1 15" N/L/R (1280x1024, 25mmDP) PnP      | \$599.00  |

## HD/FD Controllers

|  |           |
|--|-----------|
| Sony 17SF2 17" N/L/R (1280x1024, 25mmDP)       | \$1240.00 |
| Sony 17SE2T 17" N/L/R (1600x1280, 25mmDP)      | \$1495.00 |
| ISA IDE HD/FD Controller with I/O              | \$19.00   |
| VLB Enhanced IDE with I/O UART 16550           | \$30.00   |
| Adaptec 1505 SCSI CD-ROM Controller            | \$70.00   |
| Adaptec 1542CP SCSI HD/FD Controller PnP       | \$270.00  |
| Adaptec 1542CP SCSI Controller w/Kit PnP       | \$340.00  |
| Adaptec 2920 PCI SCSI Controller w/Kit         | \$200.00  |
| Adaptec 2940 PCI SCSI Controller               | \$255.00  |
| Adaptec 2940UW PCI SCSI Controller w/Kit       | \$410.00  |
| Adaptec 3940 PCI Multi-Channel SCSI Controller | \$555.00  |

## Keyboards & Cases

|   |          |
|---|----------|
| Fujitsu 4725 Enhanced 104 Keys              | \$59.00  |
| Fujitsu 8725 Enhanced 104 Keys              | \$30.00  |
| Mitsumi Windows 95 Keyboard                 | \$22.00  |
| Microsoft Natural Keyboard                  | \$80.00  |
| 25" Server Tower with 300W CSA Power Supply | \$235.00 |
| Full Size Tower with 230W CSA Power Supply  | \$115.00 |
| Mid Size Tower with 230W CSA Power Supply   | \$80.00  |
| Mini Size Tower with 200W CSA Power Supply  | \$60.00  |
| Desktop with 200W CSA Power Supply          | \$65.00  |

## Drives & Tape Backup

|                                |          |
|--------------------------------|----------|
| 1.2MB 5.25" Floppy Drive       | \$59.00  |
| 1.44MB 3.5" Floppy Drive       | \$35.00  |
| Enhanced 630MB IDE Hard Drive  | \$228.00 |
| Enhanced 850MB IDE Hard Drive  | \$246.00 |
| Enhanced 1.08GB IDE Hard Drive | \$270.00 |
| Enhanced 1.2GB IDE Hard Drive  | \$285.00 |
| Enhanced 1.6GB IDE Hard Drive  | \$325.00 |

|   |           |
|---|-----------|
| Enhanced 2.5GB IDE Hard Drive                 | \$505.00  |
| Seagate 1.0GB SCSI-2 Hard Drive               | \$370.00  |
| Seagate 2.1GB SCSI-2 Hard Drive               | \$735.00  |
| Iomega 100MB int/parallel ZIP Drive           | \$279.00  |
| Iomega 1GB int/ext JAZ Drive                  | \$675/805 |
| Syquest EZ135 Ext. SCSI Remov. Hard Drive     | \$288.00  |
| Syquest EZ135 Ext. Parallel Remov. Hard Drive | \$355.00  |
| Colorado T1000 800MB Int./Ext. Backup Drive   | \$235/275 |
| Conner 800MB Travan Tape Backup Drive         | \$199.00  |
| Conner 3200MB Travan Tape Backup Drive        | \$335.00  |

## Motherboards

|   |           |
|---|-----------|
| Triton Pentium 75/100MHz w/256KB Burst Cache    | \$310/375 |
| Triton II Pentium 75/100MHz w/256KB Burst Cache | \$390/455 |
| Endeavor II 75MHz PCI/ISA w/256KB Burst Cache   | \$485.00  |
| Asus Pentium Pro 200MHz PCI/ISA Main Board      | \$202.00  |
| 486DX4-100/486DX4-133 PCI w/256KB Cache         | \$180/195 |
| 486DX4-100/DX4-120 VLB w/256KB Cache            | \$190/200 |

## MultiMedia

|  |          |
|--|----------|
| Creative Labs 8X Discovery PnP                     | \$470.00 |
| Creative Labs 8X Performance PnP                   | \$570.00 |
| Creative Labs Sound Blaster 16                     | \$95.00  |
| Creative Labs Sound Blaster AWE32 PnP              | \$315.00 |
| Creative Labs Sound Blaster 32 PnP                 | \$190.00 |
| Creative Labs 3D Blaster                           | \$445.00 |
| Acer 8X Speed IDE CD-ROM Drive                     | \$168.00 |
| Panasonic 4X Power Drive2 Rewritable Optical Drive | \$749.00 |
| Pioneer 4X Quad Speed IDE CD-ROM Drive             | \$65.00  |
| Pioneer 4X Speed SCSI CD-ROM Drive                 | \$160.00 |
| Sony 4X Quad Speed SCSI CD-ROM Drive               | \$170.00 |
| Toshiba 6X Speed IDE CD-ROM Drive                  | \$99.00  |
| Toshiba 8X Speed IDE CD-ROM Drive                  | \$188.00 |

## Modems & Mice

|   |           |
|---|-----------|
| 14.4 S/R Int. Fax Modem w/Voice             | \$59.00   |
| 28.8 S/R Int. Fax Modem                     | \$145.00  |
| Hayes Accura 28.8 Int/Ext Fax Modem         | \$236/269 |
| Hayes Optima 28.8 Int. Fax Modem            | \$525.00  |
| Hayes Optima 28.8 Ext. Fax Modem w/Voice    | \$610.00  |
| Supra 28.8 Int. Fax Modem w/Voice           | \$165.00  |
| US Robotics 14.4Vi Int. Fax Modem           | \$125.00  |
| US Robotics 28.8Vi Int. Fax Modem w/Voice   | \$239.00  |
| US Robotics 28.8Vi Ext. Fax Modem w/Voice   | \$275.00  |
| US Robotics 28.8Vi Int. Modem (Full Duplex) | \$269.00  |
| US Robotics 28.8 DSVI Int. Fax Modem        | \$385.00  |
| Microsoft Mouse v.2 OEM                     | \$35.00   |
| Logitech Mouseman OEM                       | \$33.00   |
| Microsoft Comp. Mouse                       | \$12.00   |

## Printers

|                                      |           |
|--------------------------------------|-----------|
| Canon BJ-210 Color Inkjet            | \$255.00  |
| Canon BJC-4100 Color Inkjet          | \$389.00  |
| Brother HL660 Laser Printer 600dpi   | \$655.00  |
| Brother HL1260 Laser Printer 600dpi  | \$1545.00 |
| Epson Stylus II Color Inkjet 720dpi  | \$399.00  |
| Epson Stylus IIs Color Inkjet 720dpi | \$299.99  |
| HP 600C Deskjet Color Printer        | \$355.00  |
| HP 680C Deskjet Color Printer        | \$459.00  |
| HP 820Cxi Deskjet Color Printer      | \$550.00  |
| HP 5 Laserjet, 600 dpi 12 PPM        | \$1799.00 |
| HP 5L Laserjet, 600 dpi 4 PPM        | \$659.00  |
| HP 5P Laserjet, 600 dpi 6 PPM        | \$1255.00 |
| HP 5Si Laserjet, 600 dpi 24 PPM      | \$3999.00 |
| Raven PR-2405 24-pin, 192 cps        | \$235.00  |
| Raven PR-2420 24-pin, 256 cps        | \$385.00  |

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# Evans forecasts boom year for PCs in Canada

TORONTO (NB) — This will be another exceptional year for Canadian personal-computer sales, according to Evans Research Corp.

The research firm has also projected continued growth in the sales of magnetic and optical disk drives, and a 12 percent increase in PC distributors' revenues this year.

In its recent report on the Canadian PC market, the research firm projects shipments of PCs in Canada will rise by 11 percent this year, and by nine percent in 1997. This will not match 1995's 15 percent growth in unit sales, however.

According to Evans, 1995's growth was much higher in revenue than in unit terms, due to an 11 percent increase in PC prices.

Albert D'Aoust, associate analyst at Evans, said the home PC market was primarily responsible for this increase, with buyers more likely to buy fully configured multimedia PCs with many extras rather than cheaper, bare-bones systems.

This trend began in 1994 and led to a six percent growth in average PC prices that year, says the report.

The research firm expects the average PC price in Canada will rise again this year, though only by three percent. After 1996, declining component prices will start to push PC prices down again.

PC vendors sold more than 1.65 million units and reaped almost \$3.4 billion in sales in 1995, says the report.

Evans also noted Compaq Canada Inc. moved into first place in terms of units shipped in 1995, matching a feat achieved by its American parent company earlier. NEC Corp. and Digital Equipment Corp. also had

strong years.

Another Evans report just released says Canadian distributors collected \$3.9 billion in revenues from the sale of computers and related products in 1995, and forecasts this figure will rise 12 percent to \$4.4 billion in 1996. Sales to home users are growing fast and mass merchandisers are becoming an

increasingly important channel for PC sales, D'Aoust said.

A third report, on the Canadian storage market, says unit shipments of magnetic and optical drives grew by more than 24 percent in 1995. By the end of 1996, Evans predicted, 2 GB hard-disk drives will become standard equipment on PCs. □

Introducing the most  
affordable Pentium® CD-ROM  
notebook available today

COMPUBOOK™  
650

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If you're buying notebooks for your company, then ask lots of questions. Questions about features. Questions about price and performance. And questions about quality. Impulse has all the right answers. And they're packaged in the most affordable multimedia notebook on the market today — the COMPUBOOK 650.

Each COMPUBOOK 650 notebook computer includes a fast Pentium processor, quad-speed CD-ROM drive, 16-bit sound system and either a big-screen 11.3" or bright 10.4" colour display.

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And for your company's future needs, the COMPUBOOK 650 has flexibility built in. And if you want to know whether your investment is secure, rest easy — our displays, processors, hard disk drive and memory are all upgradable.

And just how confident are we that Impulse has all the right answers? Confident enough that we back the COMPUBOOK 650 with our I-Care three-year limited warranty and a toll-free support hotline!

Good reasons for getting to know the Impulse name.



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- ~ 810MB or 1.0GB hard drive
- ~ Infra-red data link
- ~ TouchPad
- ~ Windows 95®
- ~ 3-year I-Care warranty

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## More Canadians passing their bucks electronically

Having developed a taste for terminal banking with the introduction of the Interac network 12 years ago, the Canadian affinity for debit-card transactions seems quite natural.

Debit cards were first offered in the Ottawa/Hull region in 1990, and in less than six years more than 25 million Canadians have used them to electronically route their cash into retailers' registers.

Here are a few statistics on our electronic banking and spending habits gathered by Tandem Computers:

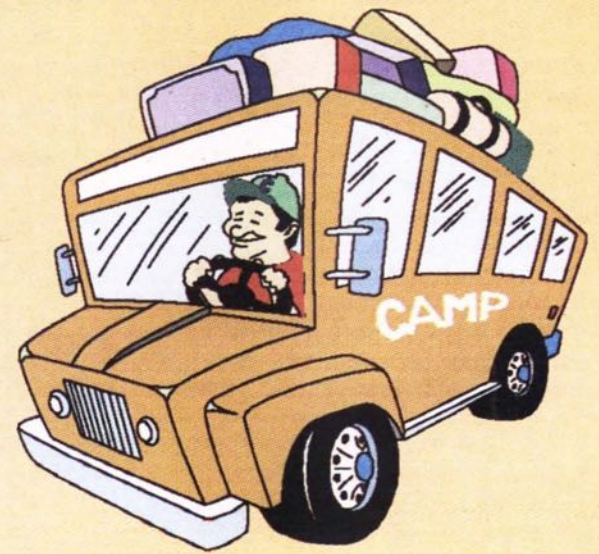
- In a country with fewer than 30 million people, there are 25.5 million cards in use.
- Canada has 17,133 Interac bank machines and 190,094 merchant direct-payment terminals.
- 5,000 terminals are added to stores each month.
- 419 million debit transactions took place in 1995, of which 51 million were in December.
- Canada has 5.3 Interac bank machines per 100,000 inhabitants, second only to Japan, which has 8.7 bank machines per 100,000 people.
- According to Canadian consumer perception, 36 percent of debit-card transactions take place in a supermarket.
- Frequent debit-card users are overwhelmingly young and female, but there has been no clear link between income or education and use. □



# Camp Sites

## Summer programs offer computing adventures for kids

BY JEAN ALLEN-IKESON



It's that time of the year again. The school bus is parked for the season. So get ready for the great Canadian summertime obsession: summer camp for the kids.

Soccer, swimming, vacation Bible school, nature camps. No doubt, as a true Canadian, you have tried them all. But this summer, let your kids learn about computers and trek through the wilds of the World Wide Web, create multimedia presentations, or animate a cyber-adventure.

The new generation of camps are not kiddie clones of adult word-processing or programming seminars anymore. They offer much more.

Many of the non-profit computer camps are taught by university students who have an almost evangelical zeal for turning their younger counterparts on to technology and computers.

Many of the non-profit computer camps are taught by university students, who have an almost evangelical zeal for turning their younger counterparts on to technology and computers.

For veterans of last summer's high-tech camps, there is a new group of advanced camps, such as those offered at McMaster University in Hamilton and British Columbia Institute of Technology (BCIT) in Burnaby. And most camps hold spaces for girls until the last minute to encourage their presence in the world of computing.

The stars of camps for teenagers are Virtual Ventures at Carleton University and Adventures in Engineering Computing at

McMaster. Sadly, the Adventure Virtuelle camp at Hull, for francophones, has been discontinued.

A year ago, it was hoped that these camps would expand to a half-dozen sites across Canada. Then came the various ministers of education for each province who have been snipping away voraciously at university budgets. The result: many institutions seem to be afraid of offering new programs this year, even if they are self-supporting. Virtual Ventures still hopes to launch additional sites next year.

For younger children, some for-profit companies such as TechnoKids and FutureKids offer innovative and creative camps. To find out about non-profit programs not listed here, ask your local library for a resource list, or call your local school board, parks and recreation department, the YMCA or local private schools.

### Computer Commotion '96 (St. John's)

There are two levels of camp in Memorial University of Newfoundland's program. Level I camps are one-week, full-day camps and are divided into two age groups, 6-10 and 11-13. They include "krazy keyboarding, goofy graphics, desktop publishing perfection, spectacular spreadsheets, wacky word processing and the weird and wonderful Internet." Level II is for returning campers who want more advanced computing, ages 11-13 only. They are treated to "dizzy designs, powerful presentations, cyber-surfing and productive programming." They also offer a "Mad Scientists Academy," art exploration or "circus excitement" camps. Cost is \$95, except for weeks that include a statutory holiday, which cost \$80.

Contact: Division of Continuing Studies, Personal & Professional Development, Memorial University, St. John's. Tel: 709-737-7979.

### Summer Sun '96 (Halifax)

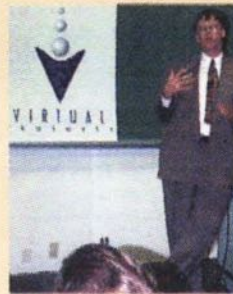
These camps are advertised as a way to fast track all levels of users onto the Information Highway. The Internet is the main theme at all three of these camps, held at Halifax's Dalhousie University, along with morph magic and manipulating sound and video clips. Each camper has use of their own computer and beginners may go on to intermediate and advanced camps, all in the same summer. There are three-day camps in July to

mid-August, separate for beginners, intermediate or advanced. The fee of \$125 includes a two-night stay, plus five meals, to encourage attendance from all across the Maritimes. Open to junior-high students.

Contact: Camp Summer Sun, Housing and Services Dept., Dalhousie University, Halifax, N.S.  
Tel: 902-494-8840. Fax: 902-494-1219  
Web site: <http://www.registrar.dal.ca/summer/>

### Virtual Ventures (Ottawa)

In its third year of operation, this student-run camp is affiliated with the Faculty of Engineering at Ottawa's Carleton University. Many of the camp's faculty organizers are also affiliated with SchoolNet. As a result, the camp is meaty with programs such as robotics, UNIX, Web page design with HTML and Java, and a scavenger hunt in cyberspace.



The camps are hands-on all the way, and also feature an "under-the-hood" session involving ripping apart a computer to learn about hardware. Virtual Ventures also pulls in guest speakers, managing to attract Bill Gates last year.

One of the less publicized advantages of the program, which is held at the university, is that it helps demystify campus life for teenagers.

If you are an adult and are feeling melancholy because the kids are getting all the "good stuff," then cross out camp and write in "workshop." Virtual Ventures offer special group Internet and HTML programming seminars for adults.

This year it also offers two four-day camps for 6-9 year olds, in addition to the camp for 10-18 year olds. The standard full-day, week-long camp is still \$200. The sessions run the weeks of July 8 through Aug. 26. The four-day junior camp costs \$150 and is held July 2-5 and Aug. 6-9.

Contact: Faculty of Engineering, Carleton University, Ottawa.  
Tel: 613-520-2600, ext. 1932.  
Fax: 613-520-5682.  
E-mail [director@vv.carleton.ca](mailto:director@vv.carleton.ca)  
Web site <http://vv.carleton.ca/>

### AdVentures in Engineering Computing (Hamilton)

Now in its second year of operation, the AdVentures camp is open to students in Grades 9 to 11. It is a non-profit, hands-on program run by students within the Faculty of Engineering.



The main objective of the camp is to throw teenagers kicking and yelling with glee into the new "information-based society." The student instructors, through their creative and innovative workshops, inspire the teen cybernauts, spark their interest, and act as role models. "Learning should not only be educational but FUN as well!" is the unwritten motto of the program.



New to the program are two advanced sessions, which will include more in-depth and technical coverage of materials presented in the regular sessions.



Some of the goodies slated for this year are computer-aided machining, in which students use a programming language to design an original logo and then use a computer-driven milling machine to carve their design in plexiglass; an Internet scavenger

Continued on page 20



# Phase 1 Systems

**HORIZON™ SYSTEMS FOR TODAY AND TOMORROW**

## HORIZON™ 586 PENTIUM "TRITON" GRAPHICS STATIONS

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- PCI Matrox Millennium 2MB VRAM Accelerator
- 17" Viewsonic 17GS LR Graphics Monitor
- PCI ADAPTEC 2940 FAST! SCSI II Retail Kit
- NEW!!! INFRA-RED Port Technology & 16550 UARTS
- 19" Diamond II LED Tower Case w/200 Watts
- 1.44 Panasonic Floppy Disk Drive
- Fujitsu 4720 Soft Touch 101 Enhanced Keyboard
- Toshiba 6X CD ROM Drive
- Logitech 3 Button Sensa/Microsoft J Mouse



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INFRA-RED Port Technology

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- NEW!!! INFRA-RED Port Technology
- 19" Diamond II LED Tower Case w/200 Watts
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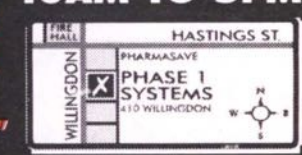
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## Computer camps for kids

Continued from page 18

hunt; CU-SeeMe technology, which is used to videoconference with other similar programs; and, of course, e-mail, graphics, scanners, programming, networks, virtual reality and the social implications of computer technology. Wow!

All the activities incorporate an engineering perspective that promotes problem solving. This camp is a must for future engineers in the greater Hamilton area. AdVentures has an instructor-student ratio of 1:7.

Regular sessions run the weeks of July 1 through Aug. 5. Advanced sessions run the weeks of Aug. 12 and 19. The \$200 fee includes a T-shirt. Financial assistance is available to a limited number of qualified applicants.



Contact: Carm Vespi, student and alumni liaison officer, Faculty of Engineering, McMaster University Hamilton, Ont. Tel: 905-525-9140, ext 24906. Fax: 905-546-5492.

E-mail vespi@mcmaster.ca or  
aecompm@mcmaster.ca  
Web site: <http://aecompm.mcmaster.ca/>

### The Mini-University Experience, UofT

The University of Toronto camps' fare is somewhat more academic and combined into "modules." Module A includes computing with law and business. Working with hardware, games, Internet, buying a computer for their own "company," or finding a job as a computer scientist should give kids a glimpse into the future. Module B includes the same computer topics but is shared with camp time on archaeology and physical and health education. Module C combines computing with science and engineering and teaching/the world of education.

All modules are full-day, two-week camps for ages 10-15, running July through mid-August. Cost is \$295-\$325 (the lower rates are for camps that include a statutory holiday).

Contact: Camp U. of T., University of Toronto, Athletic Centre, Tel: 416-978-3436. Fax: 416-978-6978  
WEB site: <http://www.utoronto.ca/dar/csp/csp.htm>

### Micro Computers Plus (Winnipeg)

Campers in this program, held at the University of Manitoba, use both Apple and IBM-compatible computers and spend half of each day on recreational activities.

Campers in the beginner and "advanced" beginner camps, ages 9-12, develop multimedia creations using

Continued on page 22

## More computing adventures

The following is a list of some more summer camp sites for kids and teens in British Columbia. —MJ

### Computer Camp

University of British Columbia,  
104-6066 Thunderbird Blvd., Vancouver, V6T 1Z3.

UBC's Community Sport Services offers a series of camps for kids with no computing experience and for those who are ready to develop their own multimedia projects. Beginner campers learn fundamentals such as 'windows,' using a mouse, and file management through projects such as creating greeting cards and writing stories. Advanced II campers delve deeper into Web authoring and will post their own pages at the Community Sport Services Web site. All campers use Macintosh computers.

**Age group:** Beginner: 6-10, Intermediate, Advanced: 8-13, Advanced II: 9-14  
**Program:** Half-day, week-long camps  
**Dates:** Beginner: July 1 through Aug. 23  
Intermediate: July 1 through July 19, July 29 through Aug. 16  
Advanced: July 8 through July 26, Aug. 5 through Aug. 23  
Advanced II: July 22-26, Aug. 19-23  
**Cost:** \$125  
**Other camps:** A variety of sports, recreational, and leadership camps.  
**Contact:** Tel: 604-822-3688 Fax: 604-822-9237  
Web site: <http://www.hockey-school.ubc.ca>

### St. George's Summer Day Camps

St. George's School, Vancouver

Children in Grades 1-2 create animated slide shows and use CD-ROM books. Students in the Grade 3-4 program will use multimedia software to create their own electronic books. Grade 5-8 participants will use sound and video to create newsletters, presentations and their own home pages. The school also offers programs that deal specifically with the Internet and computer construction. Both Mac and PC platforms are used. Swimming, recre-

ational games, arts and crafts, music or drama complement the programs. The summer programs are co-ed.

**Age group:** Grades 1-9 (or entering these grades in Sept. '96)  
**Program:** Full-day, 9 a.m.-3:30 p.m., week-long programs  
**Dates:** July 1-26  
**Cost:** \$175: Grades 1&2  
\$185: Grades 3&4  
\$195: Grades 5-8,  
Internet Surf Camp (Grades 6-9),  
Computer Building (Grades 7-9)  
**Other camps:** St. George's also offers camps in sports, science and nature, technology, and fine and performing arts.  
**Contact:** Tel: 604-224-7740 Fax 224-7066  
Day camp Web site:  
<http://web20.mindlink.net/wolf/sg/dc.html>

### WIZ Zone Summer Classes

WIZ Zone, 5975 West Blvd., Vancouver, V6M 3X1  
and 1487 Marine Dr., West Vancouver, V7T 1B8

The theme camps offered by WIZ Zone Computer for Kids Inc. include: Summer Adventures, an exploration of the Internet; Dinosaur Days, a journey through virtual museums and experts to the time of the dinosaurs; Computer Crimebusters, a course for TechnoSleuth wannabes who will take mugshots, scan fingerprints and solve puzzles; and Endangered Rangers, a computer investigation of the Earth's various environments and endangered animals. Most courses are offered for several age groups.

**Age groups:** Pre-school, 5-6, 7-9, and 10-12  
**Program:** Classes vary in length from 2-3 hours, and 1-5 days in duration.  
Contact WIZ Kids for more information.  
**Other camps:** WIZ Zone also offers computing courses for teens, adults and seniors.  
**Contact:** Vancouver, Tel: 604-266-5001  
Fax: 604-266-5025  
West Vancouver, Tel: 604-925-1440  
Fax: 604-925-1777  
E-mail (both stores): [wizard@wizzone.com](mailto:wizard@wizzone.com)

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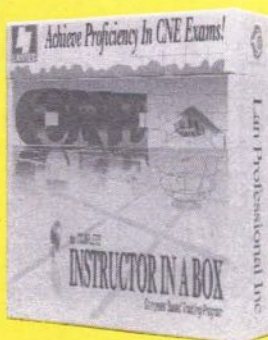
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| PowerChute Plus for Novell v4.22       | \$90            |
| PowerChute for Windows                 | \$63            |
| Network Surge Arrest 3 Outlet/7 Outlet | \$29/66         |
| PowerManager 6 Outlet                  | \$93            |
| PowerNet SNMP agent for Novell         | \$157           |

### CABLES & JACKS



#### Twisted Pair

|                                     |            |
|-------------------------------------|------------|
| Assembly, 10 BaseT Cable 8/25/50 ft | \$10/18/25 |
| Assembly, 10 BaseT Cable 100 ft     | \$45       |
| Cable, 10BaseT 8c UTP, per ft       | \$0.35     |
| Cable, 10BaseT 8c UTP, per 1000 ft  | \$220      |
| Connector RJ45M                     | \$1.00     |

#### Coaxial

|                                      |         |
|--------------------------------------|---------|
| Assembly, RG58/AU Thin Coax 25/50 ft | \$15/22 |
| Assembly, RG58/AU Thin Coax 100 ft   | \$35    |
| Cable, RG58/AU Bulk per ft           | \$0.25  |
| Cable, RG58/AU Bulk per 1000 ft      | \$180   |

### Print Servers

|   |           |
|---|-----------|
| Castelle Lan Press 1 RJ45/1 Par                     | \$410     |
| Castelle Lan Press 1 Par + 3 Ser                    | \$575     |
| Emulex NetQue 2 Port Print Server                   | \$570     |
| HP JetDirect J2550A RJ45                            | \$450     |
| HP JetDirect J2552A RJ45/BNC/LocalTalk              | \$525     |
| HP JetDirect J2555A Token Ring DB-9 & RJ45          | \$760     |
| HP JetDirect EX Plus J2591A                         | \$420     |
| HP JetDirect EX Plus3 J2593A RJ45/BNC               | \$650     |
| HP JetDirect EX Plus3 J2594A Token Ring DB-9 & RJ45 | \$885     |
| Intel Netport II 10Base-T                           | \$519     |
| Intel Netport II Thin/Thick                         | \$535     |
| Milan FastPort 3110/3210                            | \$570/670 |

### PCMCIA Adapters

|  |       |
|--|-------|
| 3COM 3C589C Etherlink III TPO                  | \$210 |
| 3COM 3C589C Etherlink III Combo                | \$275 |
| 3COM 3C689 Tokenlink III                       | \$455 |
| D-Link DE-650T PCMCIA TPO NE2000 Compatible    | \$188 |
| D-Link DE-650CT PCMCIA Combo NE2000 Compatible | \$212 |
| D-Link DME-650T WinConnect Ethernet/Modem      | \$450 |
| Microdyne NE4200 PCMCIA 10 Base T              | \$212 |
| Xircor PCMCIA Ethernet RJ45                    | \$185 |
| Xircor PCMCIA Ethernet BNC & RJ45              | \$250 |
| Xircor PCMCIA RJ45 Ethernet + 28.8bps Modem    | \$535 |
| Xircor PCMCIA Combo Ethernet + 28.8bps Modem   | \$585 |

### 10 BASE T HUBS

|  |        |
|--|--------|
| 3COM 3C16170 Linkbuilder 12 Port Hub         | \$445  |
| 3COM 3C16670 Linkbuilder FMS II 12 Port      | \$760  |
| 3COM 3C16671 Linkbuilder FMS II 24 Port mgmt | \$1350 |
| 3COM 3C16180 TP/8 Port Hub                   | \$260  |
| 3COM 3C16700 OfficeConnect 8/TPO             | \$200  |
| 3COM 3C16701 OfficeConnect 8/TPC             | \$245  |
| 3COM 3C16710 OfficeConnect 8/TPM             | \$655  |

|   |        |
|---|--------|
| CNet CN88TPC 8 Port Hub                     | \$160  |
| CNet CN80TPC 12 Port Hub                    | \$265  |
| CNet CN8816TPC 16 Port Hub, Small Footprint | \$295  |
| CNet CN8900TPC 12 Port Hub                  | \$540  |
| CNet CN8910TPC 12 Port Hub w/SNMP           | \$795  |
| DEC DETML-SA 16 Port Hub                    | \$780  |
| DEC DETML-UA 16 Port Hub                    | \$890  |
| D-Link DE-809TC 8 Port Hub                  | \$182  |
| D-Link DE-816TP 16 Port Hub                 | \$485  |
| Hewlett Packard AdvanceStack 12 J2600A      | \$810  |
| Hewlett Packard AdvanceStack 24 J2601B      | \$1140 |
| Hewlett Packard AdvanceStack 48 J2602B      | \$2600 |
| Hewlett Packard 12 Port EtherTwist J2630A   | \$1260 |
| Hewlett Packard 48 Port EtherTwist          | \$2600 |
| SMC 3605T-EZ 5 Port Hub                     | \$136  |
| SMC 3608TC-EZ 8 Port Hub                    | \$260  |
| SMC 3616TC-EZ 16 Port Hub                   | \$486  |
| SMC 3206TA Tigerhub 6 Port Hub              | \$230  |
| SMC 3312TC Tigerhub 12 Port Hub             | \$700  |

### 10 BASE T Adapters

|   |           |
|---|-----------|
| 3COM 3C503-16 TP ea/5+                      | \$275/240 |
| 3COM 3C509B TP ea/5+                        | \$145/125 |
| 3COM 3C590 TP PCI                           | \$165     |
| CNet CN600E 10 Base T ea/5+                 | \$55      |
| CNet CN600E+ 10 Base T Jumpless             | \$55      |
| CNet CN970EBT 10 Base T PCI                 | \$175     |
| HP EtherTwist 16 10BaseT J2405A ea/5+       | \$132     |
| Intel ISA EtherExpress Pro 10 BaseT         | \$125     |
| Intel ISA EtherExpress Pro 10/Flash 10BaseT | \$146     |
| Intel PCI EtherExpress Pro 10 BaseT         | \$190     |
| Microdyne NE 2000T+ 10 BaseT                | \$93      |
| Microdyne NE 2000T+ 10 Base T 20 pk         | \$1400    |
| Microdyne NE3300 EISA Combo                 | \$275     |
| Microdyne NE5500 PCI 10 Base T              | \$160     |
| SMC 8416T ISA EtherEZ 10BaseT               | \$125     |
| SMC 8432T PCI EtherPower 10BaseT            | \$160     |

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| 3COM 3C595-TX FastEthernet PCI ea/5+          | \$215/195 |
| 3COM 3C250-TX Linkbuilder FMS 100 12 Port Hub | \$2650    |
| Intel Pro 100 EISA FastEthernet               | \$340     |
| Intel Pro 100 PCI FastEthernet                | \$195     |
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| Intel EC100TX Express 100Base-TX Hub          | \$2250    |
| HP Networks 100VG ISA Adapter                 | \$238     |
| HP Networks 100VG EISA Adapter                | \$325     |
| HP Networks 100VG PCI Adapter                 | \$168     |
| SMC Etherpower 10/100Base-T PCI               | \$195     |
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| SMC 5108tx TigerHub 100 8 Port Hub            | \$1595    |
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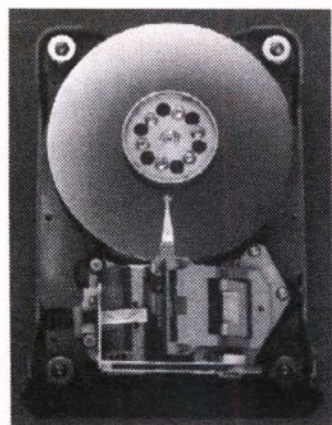
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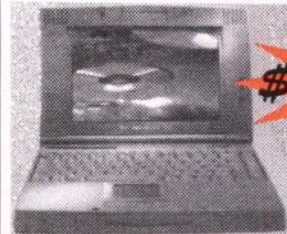
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| <b>Seagate SCSI Drives</b>                       |        |              |                  |       |       |           |            |
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| 9.1GB  | 11ms   | 5.25" FH     | Fast SCSI-2      | 1024  | 5,400 | ST410800N | \$3,200.00 |
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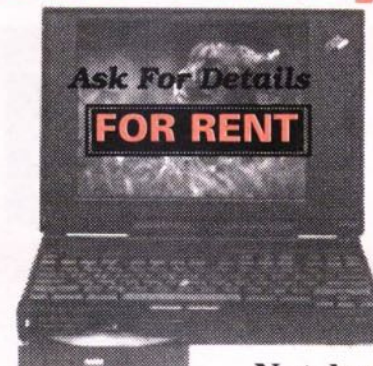
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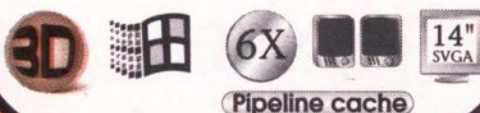
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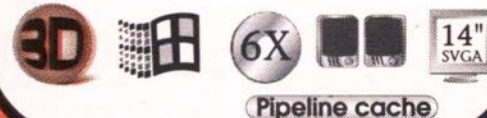


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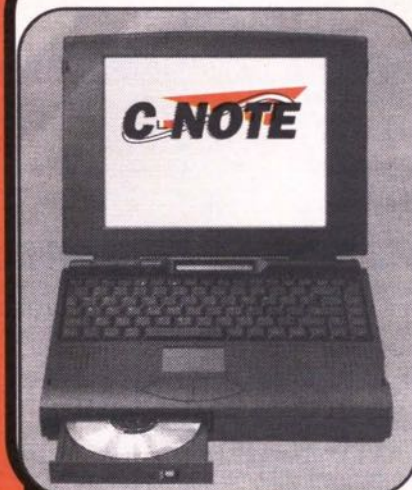


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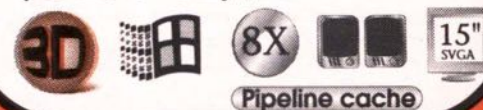
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## Computer camps for kids

Continued from page 20

HyperStudio and are introduced to the Internet.

Intermediate and advanced cyberkids, ages 10-15, learn word processing, graphics, how to use "micros" as an organizational tool, programming, Web page creation, and how to search the Net. Full-day, two-week camps, which run through July and August, cost \$200 to \$225 depending upon the session.

Contact: Joyce Fromson, director of Mini-University, University of Manitoba. Tel: 204-474-9143.  
Web site: <http://www.umanitoba.ca/faculties/education/edlab/camp/>

### Compucamp (Saskatoon)

Billed as Saskatoon's only computer camp, it is in its third year of operation at the Meewasin Valley United Church. This program is unique because it is a Windows 95-based camp.

Each child is assigned their own 486 or Pentium computer. The Internet is included

in every session, in addition to sports, swimming and crafts for all but the programming and multimedia camps.

The Internet camp—four glorious days of surfing the Internet, downloading games, using e-mail and designing a home page—runs from July 2-5 for ages 9-14. The Internet session, for ages 12-14, runs Aug. 6-9. Each Internet camp costs a modest \$100.

The beginner and intermediate camps for ages 9-11 run the weeks of July 8 and 22. The beginner camp is a basic introduction to computers, while the intermediate camp includes

Microsoft Works and Basic programming. For ages 12-14, there are similar but more age-appropriate beginner and intermediate camps offered the weeks of July 15 and 29. The cost for each of these camps is \$125.

The programming camp for ages 9-14 offers a week of structured programming in which the camper uses Microsoft Basic to develop a computer game. This is just what my 10-year old is looking for! This camp costs \$125.



Advanced Multimedia runs the week of Aug. 19, and shows kids 9-14 how to program using multimedia techniques. It costs \$125.

There are also four Compucamps for adults! Each costs \$60 and covers basic topics such as word processing and Windows 95.

Contact: Robert Meldrum,  
e-mail: [aa938@sfn.sask.sk.ca](mailto:aa938@sfn.sask.sk.ca)

Web site: <http://www.sfn.saskatoon.sk.ca/rel/unit-meewasin/index10.html>

### Surfing the Net

This is the University of Regina's first foray into computer camps. As the name implies, the camp will introduce kids, ages 8-13, to the World Wide Web and will teach them how to design a home page.

The camps are half days (mornings), for two weeks, with three different sessions available. As they are organized by the Faculty of Physical Activities, an afternoon sports camp can be taken simultaneously.

Contact: John or Mindy, Faculty of Physical Activities Studies, University of Regina. Tel: 306-585-4371.  
Fax: 306-585-4854.

### Summer Computer Camp (Calgary)

Wow, someone has really gone to work on Calgary's offerings over the past year. Originally a collection of rather dreary sounding camps in introductory subjects or programming, this year's schedule has something for every computer-addicted kid from ages 4-16.

Notables programs for ages 8-12 are Creating Storybooks and Doing Animation, and Junior Publishers. Teenagers are treated to Internet camps, creating animation or multimedia with HyperStudio scripts, or my favorite, Journey to the Centre of the Computer.

In the latter camp, kids will learn about simple electronics, digital information and how computers use it, what goes on inside the central processing unit, how to write simple programs, how to build simple computer circuits and an exploration of the guts of a computer. This camp is two nights a week for two weeks, while the other camps are half days for one week.

Kids can take a morning and an afternoon camp, on different topics, simultaneously or paired with a recreational activity for pre-teens. The age groups for the various camps are 4-7, 8-12, or 13-16. Most sessions are a modest \$89 each.

Contact: University of Calgary,  
Tel: 403-220-2866. Fax: 403-289-7287  
Web site: <http://www.ucalgary.ca/UofC/faculties/CTED>

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14" N.I. L.R. 28mm dp SVGA Monitor  
15" Mini Tower Case with 200 Watts CSA  
Power Supply  
PCI 1MB SVGA Video Card  
104 Windows 95 Keyboard  
2-Button Mouse and Mouse Pad

**\$1778**

Lease Available

Customized to:

P-100 \$1248

P-120 \$1328

P-133 \$1428

P-150 \$1578

### Intel Endeavor II Wonder (P-150)

Intel 150MHz Pentium® Processor  
Ball Bearing Fan, 256K Pipelined Burst Cache  
Intel Endeavor II Mainboard  
Built-in 16bit Sound Chip  
16MB EDO RAM  
1.6GB EIDE Hard Drive  
1.44MB Floppy Drive  
15" N.I. L.R. 28mm dp SVGA Monitor  
19" Mid-Tower Case with 200 Watts CSA Power Supply  
ATI Mach 64D PCI Video Card 2MB w/MPEG  
Fujitsu 104 Windows 95 Keyboard  
Microsoft 2-Button Mouse and Mouse Pad

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Lease Available

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P-100 \$1778

P-120 \$1848

P-133 \$1960

P-166 \$2299

### Cyrix 6x86 P150+ Warrior

Cyrix 6x86-P150+ - 120MHz Processor  
Cooling Fan, 256K Pipelined Burst Cache  
16MB RAM  
1.2GB EIDE Hard Drive  
1.44MB Floppy Drive  
15" N.I. L.R. 28mm dp SVGA Monitor  
19" Mid-Tower Case with 200 Watts CSA Power Supply  
Cirrus Logic 5446 PCI 64 bit Video Card 2MB w/MPEG  
104-Keys Windows 95 Keyboard  
2-Button Mouse and Mouse Pad

**\$1608**

Lease Available

Customized to:

P-120+ \$1488

P-166+ \$1848

### Pentium® Processor Power Upgrades:

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16MB EDO RAM ..... \$100  
32MB EDO RAM ..... \$300  
16MB RAM ..... \$90  
32MB RAM ..... \$250  
1.2 GB EIDE HD ..... \$40  
1.6 GB EIDE HD ..... \$80  
2.1GB EIDE HD ..... \$180  
2.5GB EIDE HD ..... \$250  
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Money, Dangerous  
Creatures, Oceans, CD-Sampler,  
Scenes)

### Endeavor II Wonder Upgrades:

32MB RAM ..... \$150  
32MB EDO RAM ..... \$200  
2.1GB EIDE HD ..... \$100  
2.5GB EIDE HD ..... \$170  
17" SVGA NI LR Monitor+\$410

### Cyrix 6x86 P150+ Warrior Upgrades:

32MB RAM ..... \$160  
16MB EDO RAM ..... \$15  
32MB EDO RAM ..... \$210  
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2.5GB EIDE HD ..... \$210  
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| AMD DX4-120 Chip & PCI Mainboard      | \$210 |
| AMD 5X86-133 Chip & PCI Mainboard     | \$240 |
| 100 MHz Pentium® Chip & PCI Mainboard | \$380 |
| 120 MHz Pentium® Chip & PCI Mainboard | \$460 |
| 133 MHz Pentium® Chip & PCI Mainboard | \$560 |
| 150 MHz Pentium® Chip & PCI Mainboard | \$720 |
| 166 MHz Pentium® Chip & PCI Mainboard | \$910 |
| Cyrix 6x86-P120+ Chip & PCI Mainboard | \$380 |
| Cyrix 6x86-P150+ Chip & PCI Mainboard | \$510 |
| Cyrix 6x86-P166+ Chip & PCI Mainboard | \$750 |

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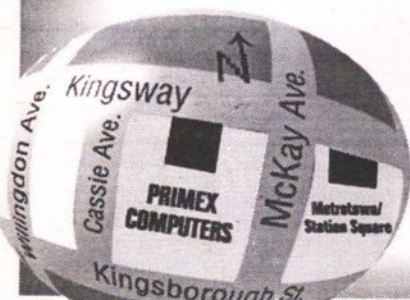
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## Kids Kamp '96 (Burnaby)

Located at BCIT, in Burnaby, B.C., Kids Kamp is in its second year of operation. Like the AdVentures program, an advanced camp is also being offered this year to entice teenagers back for a second round. These are two-week camps so they can offer more in-depth coverage.

The emphasis in the regular sessions is on the Internet, videoconferencing, multimedia design, video editing and morphing. The advanced camps cover some of the same topics but add Adobe Photoshop and Adobe Premiere. Both explore Web page design with HTML and Java.

The regular sessions are for ages 12-15, and the advanced for ages 13-16. The full-day, two-week camps cost \$409 each.

Contact: Terri Carde, Tel: 604-451-7032.  
Or Laura Davie, Tel: 604-432-8614.

## Fun With Computers (Burnaby)

From the Department of Recreational Services and Athletics, Simon Fraser University, in Burnaby, this two-week, full-day camp features four hours of computing and two hours of recreation (sports or crafts) each day.

Programming, multimedia presentations, word processing, databases, simulation spreadsheets, graphics and animation are covered, and each camper is assigned their own Macintosh computer.

This camp, for ages 8-14, is divided into two levels, depending on the child's previous experience. The same programs are used, but the content and speed of presentation is accelerated for the advanced group.

Two-week sessions begin July 2 and run through the week of Aug. 23. The cost is \$260 to \$270 (the cost is reduced for sessions that include a statutory holiday).

Contact: Summer Camps, Dept. of Recreational Services & Athletics, Simon Fraser University, Vancouver. Tel: 604-291-3675. Fax: 604-291-4922.

## Commercial camps

### Camp Imagine-Ere

This is definitely something different. Camp Imagine-Ere is a bilingual computer/circus camp situated in Escuminac, between Campbellton, N.B., and Carleton on the Quebec side of Chaleur Bay.



Imagine-Ere offers two camp formats: a day camp for local kids, and a "stay-over" camp that includes all food and activities. Campers attend for a minimum of one week, but two or more are recommended.

The camp is in a farm setting with animals and includes computer activities, circus arts and sports.

Imagine-Ere partner Huguette Allen, who organized the computer portion of this camp, ran the John Abbott College Computer Camp from 1986-1992 in Sainte Anne-de-Bellevue. An instructor from the Montreal National Circus School runs the circus activities, which are billed as "unforgettable."

Camps run the weeks of July 2 through Aug. 12. The first week is reserved for ages 14 and older, after which sessions are open to ages 8 and up. Campers are separated into



three age groups. The day camp is \$165 per week; overnight camp is \$265 per week.

Contact: Camp Imagine-Ere, Tel/Fax: 418-788-2804.  
E-mail: camp@quebectel.com  
WEB site: <http://www.arena.com/~Imagine-Ere>

### FutureKids Computer Learning Centres

FutureKids is the McDonalds of computer camps, with over 1,500 locations in 40 countries.

FutureKids boasts 20 locations across Canada, including Richmond and Victoria,

B.C., Calgary, Edmonton and St. Albert, Alta., Winnipeg, Man., two in the Toronto area, Kirkland Lake, Richmond Hill, Sudbury, Unionville, Mississauga, Sudbury, Oakville, Pickering, and Willowdale, Ont., a location in Montreal, and Bedford and Sydney, N.S. The FutureKids Web site provides e-mail links to all of the Canadian franchises.

FutureKids programs are well planned and tested to keep kids interested and learning. One camp called Multimedia Director should

Continued on page 28

# It's not Rocket Science



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# Spring Comdex focuses on Internet, intranet

BY JEFF EVANS

CHICAGO—The 10th Annual Spring Comdex show at Chicago's McCormick Centre, on the shores of Lake Michigan, marked the continuing shift of the computer industry's focus towards the Internet. This year's show ran June 3-6.

Paul Moritz, Microsoft's head of communications software development, outlined the shifts his company is making in his keynote speech on the second day of the show.

Moritz said Microsoft is moving towards an environment where PC users will be able

to move seamlessly from browsing the contents of their computer's hard drive, to the resources of any local network they may be attached to, and on to any larger-scale business or educational intranet they are a part of, as well as to the public Internet and the

World Wide Web.

This notion of all computers being part of an infinitely expanding world-network was a common theme throughout the show. IBM/Lotus exhibited their own new products for enabling workgroups and messaging, and Novell was pushing its latest version of NetWare.

## Two in one

This year's Comdex was divided into two sets of exhibits, one in the main Comdex section, the other, Windows World, in another hall. The distinction between the two was mostly arbitrary, since the MS Windows operating system, in all its varieties, was pervasive.

To prove the MS monopoly was not complete, however, Apple had a substantial presence, showing the latest models of Power Macs, Powerbooks, Newtons, and its popular Web authoring and server solutions.

Apple's new Pippin Internet appliance/multimedia player technology was on view, in the form of a system from the Japanese manufacturer, Bandai, which is to ship in the United States in the fall.

Canada was well represented at the show. Ottawa-based Corel Corp., which in recent years had often avoided exhibiting directly at Comdex (preferring instead to rent space in a hotel near Comdex, and hold their own independent event), had a large booth that was very well attended.

## Canadian club

Featured were Corel's new Corel WordPerfect Suite 7 and Corel Office Professional 7. Corel also announced its plans for the Mac version of CorelDRAW 6, Corel Click&Create, Corel Ventura 7, and the Corel Web Graphics Suite at a press conference on the first day of the show.

Corel's new office software suite is aimed directly against the industry-leading Microsoft Office. Corel hopes to leverage the enormous and loyal installed base of WordPerfect users to aid it in gaining market share in the office suite market.

In terms of cool, fun new products, Comdex had some notable innovations: one of the best was from Canada's ATI Inc., which showed its hot new 3DXpression graphics accelerator, with an optional TV tuner/framegrabber. California-based MetaTools released Goo, a graphics utility that allows amazing, real-time distortions of digital images on any PC.

## Party on

At one of the best Comdex Chicago parties, at the aptly named nightclub called Drink, MetaTools showed Goo running on a PC that was hooked up to a video camera and Play Inc.'s Snappy video digitizer. Guests had their image "snapped" (digitized) and loaded into Goo, where great indignities were wrought on their faces, to general amusement.

Although there were no really earth-shattering new products on the order of the Power Mac or Windows 95 announced, Comdex Spring '96 featured literally hundreds of new products that, in sum, show the rapid movement of the industry towards a high-velocity, wired world that will be very different from the one in which we now live. □

Contact: Comdex Web site: [www.comdex.com](http://www.comdex.com)

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- **TYAN Titan-3** Mainboard
- **Intel 166MHz** Pentium processor
- **Intel Triton** Chipset, flash BIOS
- **32Mb EDO Ram**, 512k Pipeline cache
- **2.0Gb EIDE** mode-4 Hard Drive
- **3.5" 1.44Mb** Floppy Drive
- **Matrox Millennium** PCI video
- **2Mb WRam**, MPEG & 3D
- **Toshiba 6X** EIDE CD-ROM
- **SoundBlaster 16bit** sound
- **SONY Amp.** speaker
- **104-key keyboard & MS** serial Mouse
- **28.8 fax/modem** internal
- **Mid Tower Case** CSA PS
- **17" SVGA 0.28mm**, NI L/R Monitor
- **MS-Window 95** CD OEM
- **2 Year Parts & Labor** Warranty

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## P5 Power Workstation

- **Intel 133MHz** Pentium processor
- **Intel Triton** Chipset, flash PnP BIOS
- **16Mb EDO Ram**, 512k Pipeline cache
- **1.6Gb EIDE** mode-4 Hard Drive
- **3.5" 1.44Mb** Floppy Drive
- **Matrox Millennium** PCI video
- **2Mb WRam**, MPEG & 3D
- **6X EIDE CD-ROM** drive
- **SoundBlaster 16bit** sound
- **SONY Amp.** speaker
- **104-key keyboard & MS** serial Mouse
- **28.8 fax/modem** internal
- **Mid Tower Case** CSA PS
- **15" SVGA 0.28mm**, NI color monitor
- **2 Year Parts & Labor** Warranty

**One Month**  
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## Intel Triton Workstation

- **Intel 100MHz** Pentium processor
- **Intel Triton** Chipset, flash BIOS
- **256k Pipeline Burst** Cache
- **16Mb Ram** 70ns
- **1080Mb** EIDE Hard Drive
- **3.5" 1.44Mb** Floppy Drive
- **PCI video**, MPEG, 1Mb DRam
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- **6X CD-ROM** drive
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| <b>Pentium -100 Mhz \$1255</b>   | <b>Pentium -100 Mhz \$1735</b>  | <b>Pentium -100 Mhz \$2346</b>                                      |
| 256KB Pipeline Burst Cache   | 256KB Pipeline Burst Cache  | 256KB Pipeline Burst Cache  |
| 8MB 70ns RAM   | 16MB 60ns RAM EDO*  | 16MB 70ns RAM EDO*  |
| 1.0GB EIDE hard drive, Mode 4  | 1.2GB EIDE hard drive, Mode 4   | 1.6GB EIDE hard drive, Mode 4                                       |
| 3.5" 1.44MB floppy disk drive  | 3.5" 1.44MB floppy disk drive   | 3.5" 1.44MB floppy disk drive                                       |
| PCI EIDE 2x16550UART   | PCI EIDE 2x16550UART  | PCI EIDE, 2x16550UART   |
| Trident 9680 or Cirrus Logic 5446 64bit graphics card with 1MB DRAM Exp. 2MB | ATI Mach64 or Diamond Stealth 64 Video Graphics Card with 1MB DRAM Exp. 2MB | MGA Millennium 3D MPEG & Video Graphics Card with 2MB WRAM Exp. 4MB |
| 14" 1024x768 N.I. L.R. 28dp  | Preview 15" 1280x1024 N.I. L.R. 28dp  | SONY 15" 15SX N.I.L.R. 1280 x 1024, .25dpi                          |
| 14" Mini-tower case with 200W  | 16" Mini-tower case with 200W   | 19" Med-tower case with 200W  |
| Logitech 2B mini mouse   | Logitech MouseMen 3B mouse  | Microsoft V2.0 2B mouse   |
| 104 Windows 95 Keyboard  | 104 Windows 95 Keyboard   | 104 Windows 95 Keyboard   |
|  | 4X EIDE CD ROM drive  | 6X EIDE CD-ROM drive  |
|  | Soundblaster 16bit  | Soundblaster 32 PnP W/wavetable                                     |
|  | Stereo Speaker (30W)  | Yamaha YST-M10 Speaker  |
| <b>Full Screen MPEG</b>  | <b>Full Screen MPEG</b>   | <b>Full Screen MPEG SB 32 PNP</b>                                   |
| <b>Pentium Processor-based Systems</b>                                       |   |   |
| Intel P120 / Cyrix P120+ ..... \$1330 / \$1275                               | Intel P120 / Cyrix P120+ ..... \$1810 / \$1755                              | Intel P120 / Cyrix P120+ ..... \$2425 / \$2365                      |
| Intel P133 ..... \$1435  | Intel P133 ..... \$1915   | Intel P133 ..... \$2525   |
| Intel P150 / Cyrix P150+ ..... \$1565 / \$1388                               | Intel P150 / Cyrix P150+ ..... \$5055 / \$1880                              | Intel P150 / Cyrix P150+ ..... \$2666 / \$2495                      |
| Intel P166 / Cyrix P166+ ..... \$1875 / \$1700                               | Intel P166 / Cyrix P166+ ..... \$2266 / \$2185                              | Intel P166 / Cyrix P166+ ..... \$2878 / \$2796                      |
| <b>Intel Pentium Pro Processor-based Systems</b>                             |   |   |
| Pentium Pro -200Mhz ..... \$2890   | Pentium Pro -200Mhz ..... \$3350  | Pentium Pro -200Mhz ..... \$3946                                    |

**TWO YEARS PARTS AND LABOUR WARRANTY**

Prices subject to change without notice and all listed prices reflect cash discount

### FRONTIER'S FAVORITE OPTIONS:

|  |           |
|--|-----------|
| 8MB RAM to 16MB                        | \$135     |
| 8MB RAM to 16MB                        | \$99      |
| 1.0GB to 1.2GB HD                      | \$35      |
| 1.2GB to 1.6GB HD                      | \$45      |
| 4x to 6x CD-ROM                        | \$49      |
| 6x to 8x CD-ROM                        | \$85      |
| Video DRAM 1MB to 2MB                  | \$38      |
| Windows 95 (Full) CD Version           | \$128     |
| 14" NI to 15" Monitor                  | \$95      |
| Supra Express 28.8 Fax/Voice V.34      | \$179     |
| U.S.R. 28.8 Fax V.34 Win/Reg. Modem    | \$189/225 |
| Microsoft Nature 104 Keyboard          | \$78      |
| MS Encarta96 Bundle (5CD Titles)       | \$89      |
| MS Office Pro Bundle                   | \$485     |
| QuickCam (Digital Camera) & Microphone | \$148     |

## PENTIUM NOTEBOOKS

*The Ultimate Performance!*

### TOSHIBA

|  |        |
|--|--------|
| 100CS - P75 / 8MB / 520MB / 10.4" DualScan         | \$2635 |
| 410CDT - P90 / 8MB / 772MB / 11.3" Active 4X CD    | \$4980 |
| 720CDT - P133 / 16MB / 1.13GB / 12.1" Active 6X CD | \$9367 |

### TEXAS INSTRUMENTS

|  |        |
|--|--------|
| Extensa510 - P100 / 8MB EDO / 810MB 10.4" DualScan Sound 16bit | \$2820 |
| Extensa560CD - P75 / 8MB / 810MB 10.4" DualScan 4X CD          | \$3440 |
| Extensa750CD - P100 / 8MB / 810MB 11.3" DualScan 6X CD         | \$4130 |

### NEC

|  |        |
|--|--------|
| Versa 550D - P75 / 8MB / 540MB 10.1" DualScan                    | \$2545 |
| Versa 2200C - P75 / 8MB / 810MB 9.5" Active                      | \$3189 |
| Versa 4000C - P90 / 8MB / 810MB / 10.1" Active 4X CD             | \$5659 |
| Versa 4080H - 120 / 8MB / 1GB / 10.1" Active (Free Leather Case) | \$5899 |
| Versa 6000H - P100 / 16MB / 1.0GB 11.3" Active 6X CD             | \$7525 |
| Versa 6030H - P133 / 16MB / 1.3GB 12.1" Active 6X CD             | \$8340 |
| Versa 6080X - P133 / 16MB / 1.4GB 12.1" Active 6X CD             | \$9120 |

### AST

|  |        |
|--|--------|
| Ascentia J10 - P75 / 8MB / 500MB 10.4" DualScan        | \$3039 |
| Ascentia J10 - P75 / 8MB / 800MB 10.4" DualScan        | \$3420 |
| Ascentia J30 - P100 / 8MB / 800MB 10.4" Active         | \$4175 |
| Ascentia P30 - P100 / 8MB / 800MB 11.3" DualScan 4X CD | \$4735 |
| Ascentia P50 - P133 / 8MB / 800MB 11.3" Active 4X CD   | \$6085 |



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## MOTHER BOARD



P/I-P6RP4 150-200MHz PB256K (Pentium Pro) .....\$Call  
**P/I-P55TP4 75-166MHz PB256K (430HX) Triton2 ..\$238**  
 P/I-P55TP4N 75-166MHz PB256K (430FX) .....\$228

## GIGABYTE

GA-486AL PCI 256K Cache .....\$129  
 GA-586ATS 75-200MHz PB256K Flash PnP .....\$189



Endeavor-II 75-166MHz PB256K Flash PnP .....\$318  
 Atlantis 75-150MHz SB16bit 1MB Video PB256K .....\$459

## TYAN

Titan III (S1468) 75-200MHz PB256K Triton .....\$238  
 Tomcat I (S1562) 75-200MHz PB256K Triton 2 .....\$295  
 Tomcat II (S1562D) 75-200MHz PB256K Dual Pentium .....\$495

## VISION

**Pentium 586 PB256K. Cache Flash PnP .....\$165**

## CPU & MEMORY



Pentium Pro P200 MHz .....\$Call  
 Pentium P150 / P166 MHz .....\$530/715  
 Pentium P120 / P133 MHz .....\$279/389  
 Pentium P75 / P100 MHz .....\$159/215



DX4-100 / DX4-120 / DX4-133 (3.3v) .....\$65/75/85

## CYRIX

5x86-120 / 5x86-133 MHz (486) .....\$105/135  
 6x86-P120+ / 6x86-P133+ (Pentium) .....\$Call  
 6x86-P150+ / 6x86-P166+ (Pentium) .....\$Call

## MEMORY

1MB 30pin 70ns / 4MB 30 pin 70ns .....\$29/75  
 4MB 72 pin 70ns / EDO 4MB 72 pin 60ns .....\$Call  
 8MB 72 pin 70ns / EDO 8MB 72 pin 60ns .....\$Call  
 16MB 72 pin 70ns / EDO 16MB 72 pin 60ns .....\$Call  
 32MB 72 pin 70ns / EDO 32MB 72 pin 60ns .....\$Call

## MASS STORAGE



**EIDE**  
 ST51080A 1.0GB / ST51270A 1.3GB .....\$268/285  
 ST31640A 1.6GB / ST32140A 2.1GB .....\$365/420

## SCSI

**ST51080N 1.0GB .....\$355**  
 ST32430N 2.0GB / ST32430W Wide 2.0GB (H) .....\$849/925  
 ST32550N 2.0GB / ST32550W Wide 2.0GB (B) .....\$1015/1095  
 ST15230N 4.0GB / ST15230W Wide 4.0GB (H) .....\$1349/1445  
 ST15150N 4.0GB / ST15150W Wide 4.0GB (B) .....\$1679/1767  
 ST410800N 9GB / ST410800W Wide 9GB .....\$3100/3185

## Quantum

**EIDE**  
 QJFB1280A Fireball 1.2GB .....\$309  
 QUSC1700A Sirocco 1.7GB .....\$368  
 QUSC2550A Sirocco 2.5GB .....\$485

**SCSI**  
 QJFB1280S Fireball 1.2GB .....\$415  
 VP32210 Capella 2.1GB / 2.1GB Wide .....\$905/975  
 XP34301 Grand Prix 4.3GB / 4.3GB Wide .....\$1278/1295  
 XP34300 Atlas 4.3GB / 4.3GB Wide .....\$1355/1430

## IBM

**IBM (OEM) DJAA-31700 1.7GB .....\$335**



71084A 1.08G / 71260A 1.2G .....\$258/279  
**71626A 1.6GB / 721626A 2.0G .....\$335/395**



W.D. AC21000 1.2G / AC31600 1.6G .....\$285/335  
**W.D. AC32100 2.1G / AC32500 2.5G .....\$435/510**

## REMOVABLE STORAGE/REWRITABLE OPTICAL DRIVE



## IOMEGA

Zip Drive 100MB Parallel (29ms 20MB/min) .....\$265  
 Zip Drive 100MB SCSI (29ms 60MB/min) .....\$265  
 Zip Disks 100MB Single 10 Pack .....\$22/199  
**Jaz Drive 1GB SCSI Int./Ext. (12ms 6.62MB/sec) ..\$670/788\***  
 Jaz Disks 1GB Single / 5 Pack .....\$145/628



SureStore CD-Writer 4020i .....\$1,345  
 SureStore CD-Writer Media 10PK .....\$168

## SYQUEST

EZ135 135MB Ext. Parallel (13ms 1.0MB/sec) .....\$315  
 EZ135 135MB Ext. SCSI (13ms 2.4MB/sec) .....\$278  
 EZ135 135MB Disks .....\$34

## TAPE BACKUP



T1000 800MB Travan w/tape Int. / Ext. ....\$225/258  
 Jumbo 1400 1.4GB Int. ....\$294  
 TAPE 3M TR-1 400MB/MC3000XL .....\$39/39  
 TAPE 3M TR-3 1.6GB .....\$49  
 Powertape 2.4GB Int. / Ext. ....\$1370/1580

## CONNER

Tape Stor Travan 800MB w/tape Int. / Ext. ....\$235/388  
 Tape Stor Travan 3200MB w/tape Int. ....\$415  
 Tape Stor Travan 8000MB .....\$Call  
 DAT 2-4GB SCSI Int.(4320RT) / Ext. (4350XT) .....\$987/1140  
 DAT 4-8GB SCSI Int.(4326RP) / Ext. (4356XP) .....\$1350/1495

## IOMEGA

Ditto Easy 800MB Int. / Ext. ....\$218/228  
 Ditto 3200 3.2GB Int. / Ext. ....\$325/475

## VIDEO CARD



Winboost M64 1(Exp.) / 2MB DRAM .....\$139/169  
 Winboost M64 Video 2MB DRAM .....\$199  
 Winturbo M64 2M / 4MB VRAM .....\$319/579  
 Graphic Pro Turbo 2M / 4MB VRAM .....\$375/589

## DIAMOND

**Stealth64 3D 2000 2MB (EDO) DRAM (New!!) .....\$195**  
 Stealth64 Video 2121-1M / 2201-2M (EDO) .....\$139/215  
 Stealth64 Video 2121TV-1M / 2201TV-2M .....\$325/385  
 Hardware MPEG / TV Tuner (for TV Series) .....\$165/165  
 Stealth64 Video 3200 2MB VRAM .....\$335  
 Stealth64 Video 3240-2M / 3400-4M VRAM .....\$365/585

## MATROX

**Millennium MIL/2B / MIL/2I PCI 2MB WRAM ....\$339/375**  
 Millennium MIL/4I PCI 4MB WRAM .....\$555  
 Millennium Media XL/Media XL IMPEG .....\$299/425  
 MTA TV Toner Board .....\$199

## TRIDENT

PCI 9440 1M / 9680(64bit) MPEG 1MB .....\$59/79

## CIRRUS LOGIC

PCI 5446 MPEG 64bit 1MB .....\$79

## MODEM



Lifestyle 28.8 V.34 w/fax & caller ID Int./Ext. ....\$220/235  
 Power 28.8 V.34 w/fax & caller ID flash ROM Int .....\$279/315  
 BitSURFR pro ISDN terminal adapter .....\$395

## HEYES

Accura 28.8 V.34 w/fax Int. / Ext. ....\$248/278  
 Optima 28.8 V.34 w/fax Int. / Ext. ....\$Call

## CARDINAL

MVP 28.8 V.34 w/fax Int./Ext. ....\$193/225  
 MVP 28.8 V.34 w/fax & voice Int./Ext. ....\$235/275

## SUPRA

SupraExpress 28.8 V.34 w/fax Int./Ext. PnP .....\$179/225  
 SupraExpress 28.8 V.34 w/fax & voice Int. PnP .....\$179  
 SupraFax 28.8 V.34 w/fax & caller ID flash Int./Ext. ....\$259/298

## Robotics

Sportster 14.4 V.42 w/fax Int./Ext. ....\$128/155  
 Sportster 28.8 V.34 Win Modem Int. ....\$189  
 Sportster 28.8 V.34 w/fax PnP Int./Ext. ....\$229/258  
 Sportster Vi 28.8 V.34 w/fax & voice Int./Ext. ....\$239/275  
 Sportster Vi DSV0 28.8 V.34 w/fax & Voice Int. ....\$375  
**Sportster Voice Mail 28.8 V.34 w/Full Duplex Speakerphone, Call ID, Smart Ring Int./Ex. ....\$259/289**  
 Courier V. Anything Fax Int./Ext. ....\$478/510  
 Sportster/Courier ISDN 128K Int. ....\$589/720

## PRINTER



Laser Jet WL 660 / HL 660 600dpi .....\$610/658  
 Laser Jet HL-1260dpi .....\$1,440

## Canon

DeskJet BJ30 Black / BJC70 Color .....\$288/469  
 DeskJet BJC210 Color / BJC 4100 Color .....\$266/389  
 LaserJet LBP460 600dpi .....\$479

## EPSON

DeskJet Stylus Color IIS / Stylus Color II .....\$268/379  
 DeskJet Stylus Pro / Stylus Pro XL .....\$665/2350



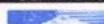
DeskJet 600 / 680C .....\$359/457  
 DeskJet 820Cxi/850C .....\$549/679  
 LaserJet 5L 600dpi 1MB .....\$649  
 LaserJet 5P 600dpi .....\$1,230  
 LaserJet 5MP 600dpi 6ppm .....\$1,485

LaserJet 5 600dpi 12ppm .....\$1,830  
 LaserJet 5N 600dpi 12ppm 6MB P.S. ....\$2,130  
 LaserJet 5M .....\$2,489



Dot Matrix 2405 24pin .....\$245  
 LaserJet LP1030 .....\$1,440

## SCANNERS



ScanJet 4C w/Photopaint .....\$1,325



**PhotoPC Digital Camera (New!!) .....\$679**  
 ES1000C Flatbed Color w/Photoshop LE .....\$1,050  
 ES1200C Flatbed Color w/o/software .....\$1,349  
 ES1200C Pro Flatbed Color w/Photoshop Full .....\$1,590

## CONNECTIX

QuickCam (Black & White), Free Microphone .....\$148  
**QuickCam (Color) .....\$359**

## MONITOR



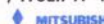
**MicroScan 4V 15" .28mm N.I.L.R. ....\$529**  
 MicroScan 5V 17" .28mm N.I.L.R. ....\$899  
 MicroScan 17X 17" .28mm N.I.L.R. Rotatable .....\$1,270



DX1595 15" / DX15T 15" .26mm 1280x1024 .....\$510/625  
**DX1795 17" / DX17T 17" .26mm 1280x1024 .....\$935/1050**

## SONY

Multiscan 15SX 15" / 15SEII 15" .25mm .....\$589/670  
**Multiscan 17SEII 17" / 17SEII 17" .25mm .....\$1195/1540**



Diamond Scan 15HX 15" .28mm .....\$619  
 Diamond Pro 17TX 17" .25mm .....\$1,590  
 Diamond Pro 21TX 21" .30mm .....\$2,630

## VIEWSONIC

ViewSonic 15GS 15" / 15GA 15" .26mm .....\$655/720  
 ViewSonic 17GS 17" / 17GA 17" .26mm .....\$1015/1110  
 ViewSonic 21PS 21" .....\$2,350

## NEC

NEC 15XV+ / 15XE .28mm .....\$678/786  
 NEC 17XV+ / 17XE .28mm .....\$1158/1448  
 NEC C500 15"/M500 15" .25mm (New) .....\$550/810  
 NEC M700 17" .25mm (New) .....\$1,227

## NANAO

Flexscan T2-17TS 17" .25mm .....\$1,540  
 Flexscan T2-20TS 20" .25mm .....\$Call  
 Flexscan FX2-21" .....\$4389



Goldstar GS2010 20" 1600x1280 .....\$1,520

## COMPUTARTNER

CompuPartner 14" / 15" .28mm N.I.L.R. ....\$335/465  
 CompuPartner 17" .28mm N.I.L.R. ....\$830

## MULTIMEDIA



Altec Lansing ACS52 Speaker .....\$135  
 Altec Lansing ACS53 Speaker w/Subwoofer .....\$198  
 Altec Lansing ACS300 Speaker w/Subwoofer .....\$324  
 Altec Lansing ACS500 Speaker Surround Sound .....\$479  
 NEC AudioTower Speaker System .....\$158  
**Yamaha YST-M10 Speaker .....\$76**  
 Yamaha YST-M15 Speaker .....\$Call  
 Yamaha YST-SS510 w/subwoofer .....\$Call  
 Sony CSS-100 Desktop Speaker .....\$68  
 PMPO691 Stereo Speaker .....\$33

## CREATIVE

SoundBlaster 16 / PnP Version .....\$98/118  
 SoundBlaster 16 SCSI-2 .....\$175  
**SoundBlaster 32 PnP .....\$205**  
 SoundBlaster AWE32 PnP (Full) .....\$325  
 Performance 6X(32 bit SoundCard) Kit .....\$498  
 VideoBlaster MP400 full screen/full Video .....\$398  
 3D Blaster PnP Game Card(2MB w/Game) .....\$465

## ADVANCED GRAVIS

Team Sports Set(Multi-Player Game System) .....\$139

## CD-ROM



**Pioneer DR2111 4X Int. EIDE .....\$65**



GoldStar GCD-R580B 8X EIDE Int. ....\$185



Panasonic CR581 4X Int.EIDE .....\$86  
 Panasonic CR582 6X Int.EIDE .....\$115

## TOSHIBA

Toshiba XM5402B 4X EIDE Int. ....\$86  
**Toshiba XM5522B 6X EIDE Int. ....\$115**  
 Toshiba XM5602B 8X EIDE Int. ....\$185  
 Toshiba XM3701B 6.7X SCSI Int. ....\$465

## TEAC

Teac 6X EIDE Int. ....\$155

## NEC

Multispin 4X4 CD-ROM Changer .....\$395  
 MultiSpin 4X CDR-510 SCSI (OEM) .....\$310  
 MultiSpin 6X CDR-501/502 SCSI Int. ....\$585/659

## NETWORKING



CNET 650+ 16BIT Coax & RJ-45 Jumperless .....\$55  
 CNET 650+ 16BIT Combo 5pack Jumperless .....\$248  
 CNET CN10EBT/PCI Combo Ethernet .....\$225  
 CNET CN88TPC 8 Port Hub .....\$175  
 CNET CN8816TPC 16 Port Hub .....\$310  
 CNET CN8020TPC 20 Port Hub .....\$360

## 3Com

Etherlink 16bit 3C509B Coax or RG45 .....\$128 / 122  
 Etherlink 16bit 3C509B Combo Single .....\$156  
 Etherlink 16bit 3C509B 5Pack .....\$698  
 Etherlink PCI 3C590 TP (RG45) Single .....\$165  
 Etherlink PCI 3C590 TP (RG45) 5Pack .....\$730  
 Etherlink PCI 3C590 TP (RG45) 20Pack .....\$2,492  
 Etherlink PCI 3C590 Combo Single .....\$189  
 Etherlink PCI 3C590 Combo 5Pack .....\$950  
**Fast Etherlink PCI 3C595TX 10/100BT .....\$199**  
 Linkbuilder FMS-II 3C16670 12 Port Hub .....\$756  
 Linkbuilder FMS-II 3C16671 24 Port Hub .....\$1,332



EtherExpress Pro 16bit Coax or 10BT .....\$148  
 EtherExpress Pro Flash Single .....\$158  
 EtherExpress Pro Flash 5Pack .....\$678  
 EtherExpress Pro 10/100 PCI Single .....\$298  
 EtherExpress Pro 10/100 PCI 5Pack .....\$899



Etherporwer 10/100 PCI .....\$204  
 Etherpower 10/100 5pack & 20pack .....\$Save

## POWER PROTECTION

APC UPS AP280VA / AP-BP280PnP .....\$166/229  
 APC UPS AP450VA / AP-BP420PnP .....\$255/345  
 APC UPS AP600VA / AP-BP650PnP .....\$345/438  
 Surge Arrest 3 or 7 Outlets (Office or Home) .....\$33/58

## CONTROLLERS



16 bit Super I/O 2s.1p.1g .....\$22  
 VLB Promise 2300+ UART16550 .....\$88  
 SCSI ISA Adaptec 1505A .....\$68  
 SCSI ISA Adaptec 1522A / 1542F .....\$98/279  
 SCSI PCI Adaptec 2940 / 2940UW .....\$260/318  
 SCSI PCI Adaptec 3940 Kit .....\$560



SCSI ISA Adaptec 1505A .....\$68  
 SCSI ISA Adaptec 1522A / 1542F .....\$98/279  
 SCSI PCI Adaptec 2940 / 2940UW .....\$260/318  
 SCSI PCI Adaptec 3940 .....\$430

## KEYBOARD, MICE & CASE



BTC 104 Windows 95 Keyboard .....\$33  
 Mini Keyboard ACK500 .....\$69  
 Fujitsu 4870 / 4725 Win95 .....\$48/59  
 Focus 2001+/7000 Trackball .....\$48/78  
 Focus 9000 Pro w/programming .....\$98  
 Microsoft Nature Keyboard .....\$98  
 Logitech 2B Mouse / MouseMan .....\$22/35  
 Logitech MouseMan Cordless .....\$98  
 Logitech Bus/TrackMan Combo .....\$87/120  
 14"/19" / 24" Mini tower case 200W .....\$65/88/145  
 Glare/Guard Standar/Maximum .....\$48/98

## SOFTWARE



Corel Draw V6.0 for Windows 95 CD .....\$485  
 Corel Draw V3.4 to V6.0 upgrade .....\$399  
 Corel Draw V5.0 to V6.0 upgrade .....\$268  
 Corel Gallery V2.0 .....\$88  
 Corel photo paint .....\$210  
 McAfee Virus Scan for Win95 .....\$75  
 Norton Anti-V



# COMPUTER CAMPS FOR KIDS

## Computer camps for kids

Continued from page 23

tie in nicely with the "create your own multimedia story/movie/game" software that is now widely available for children.

Campers create a computerized storyboard and learn the basics of music on a computer. They edit video clips and scan in pictures for a multimedia presentation.

Other camps, for ages 8-14, explore robotics, mysteries, or teach campers how to create and market their own companies. Younger children explore "megabyte zoo," invent a new toy or game on the computer, immerse themselves in Disney cartoons, or go on a

world adventure via the computer.

FutureKids has programs for ages 4-14. Expect to pay about \$150 for a one-week, half-day camp.

Contact: Check local phone listings for FutureKids.

Web site: <http://www.futurekids.com>

### TechnoKids

TechnoKids is an Ontario franchise with outlets in Oakville, Mississauga, Scarborough and

Barrie. The summer camp programs are one-week, full-day sessions from July 2 to Aug. 30, for ages 7-12.

Each day of the week centres around a theme such as TechnoCop, TechnoReporter or TechnoSpace. Activities are carefully designed and tested. The first day is TechnoQuest and includes Internet "travel" and sending "electronic post cards." The last day is on robotics using LegoLogo, which is built and programmed by computer. All projects are hands-on with a low camper to instructor ratio. The cost for the one-week camp is \$199. □

Contact: TechnoKids, check local phone listings. E-mail: [Mississauga:technomi@inforamp.net](mailto:Mississauga:technomi@inforamp.net)

Oakville: [technokid@inforamp.net](mailto:technokid@inforamp.net)  
Scarborough: [t+@altcom.net](mailto:t+@altcom.net)  
Barrie: [technok@barinto.on.ca](mailto:technok@barinto.on.ca)



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Richmond, BC, V6X 2R2  
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Authorized Dealer  
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### Network Software & Kits

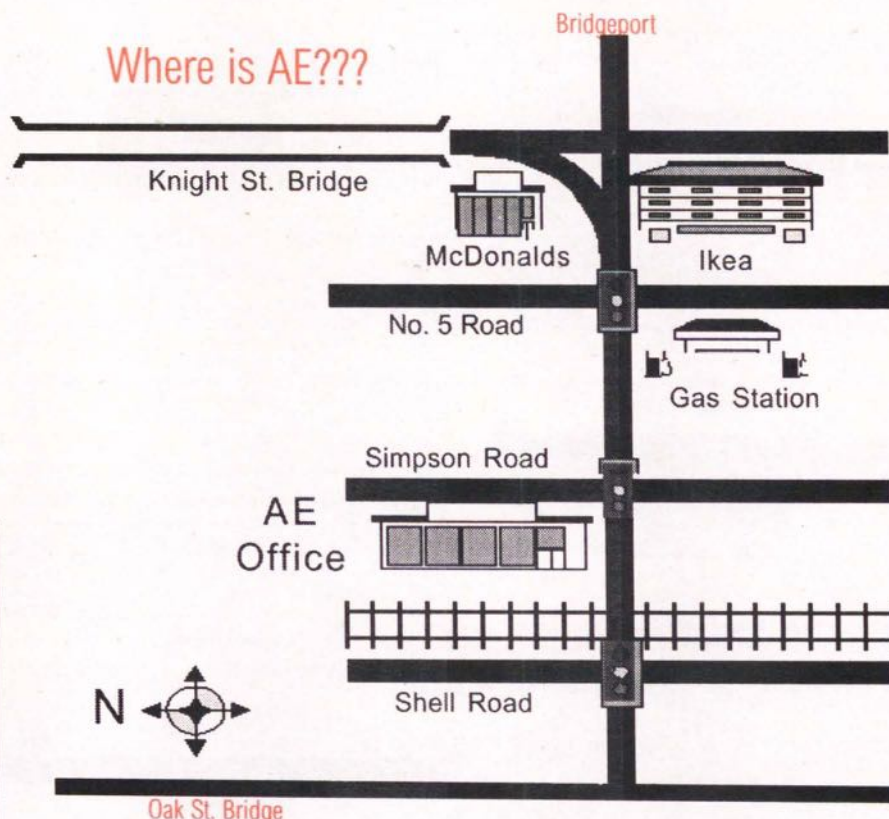
|   |           |
|---|-----------|
| Microsoft Windows '95 Upgrade/Full Version                            | \$129/265 |
| Microsoft Windows NT v3.51 Workstation                                | 395       |
| Microsoft Windows NT v3.51 Server                                     | 895       |
| Netware v4.1 (5/10/25/50/100)   | call      |
| Ethernet Hardware Kit (2cards, 2 terminators, 25' coax)               | \$125     |
| Lantronic AI v6.0 Starter Kit (complete setup for 2 node)             | 370       |
| Lantronic AI v6.0 Add-On Kit (complete setup for 1 node)              | 95        |
| GVC NE2000 16-bit Ethernet Adapter (BNC/10BT)                         | \$55      |
| Intel EtherExpress Pro/10 Ethernet card (10BT)                        | 135       |
| 3Com 3C509 Etherlink IIIb Ethernet Card (10BT/10B2)                   | 175       |
| Allied Telesyn MR-820TR Unmanaged 8-port Hub                          | 180       |
| 3Com Linkbuilder TP/8 Unmanaged 8-port Hub                            | 289       |
| 3Com Linkbuilder TP/12 Unmanaged 12-port Hub                          | 469       |
| *call for custom length cable both coax (RG58) & twisted pair (RJ-45) |           |

### Motherboard & RAM

|   |             |
|---|-------------|
| Asus SP3 AMD486DX4-100MHz PCI/VLB MB, 256k, IDEIO       | \$249       |
| Asus T2P4 P-75MHz PCI MB, 256k PB cache, IDEIO          | 415         |
| Asus T2P4 P-100MHz PCI MB, 256k PB cache, IDEIO         | 470         |
| Asus T2P4 P-120MHz PCI MB, 256k PB cache, IDEIO         | 555         |
| Asus T2P4 P-133MHz PCI MB, 256k PB cache, IDEIO         | 660         |
| Asus T2P4 P-150MHz PCI MB, 256k PB cache, IDEIO         | 815         |
| Asus T2P4 P-166MHz PCI MB, 256k PB cache, IDEIO         | 1015        |
| Asus T2P4 Pentium PCI MB (no cpu), 256k PB cache, IDEIO | 59          |
| Asus Pentium Pro 200MHz PCI MB, 256k, IDEIO             | \$1995      |
| 486 CPU Heatsink / Pentium Heatsink                     |             |
| 9 / 15  |             |
| 1MB/4MB SIMM-70ns (30pin)                               | 25 / 65     |
| 4MB/8MB/16MB SIMM-60ns (72pin) w/o Parity               | 55/ 95/ 179 |
| 4MB/8MB/16MB SIMM (72pin) EDO Memory                    | 59/ 99/ 189 |
| *Please call on all Ram prices                          |             |

### Monitor, Video Card

|  |         |
|--|---------|
| Daytek 14" SVGA Monitor, 28mm dp, NI             | \$319   |
| Daytek 1536 15" SVGA Monitor, 28mm dp, NI, EStar | 419     |
| Daytek 1531 15" SVGA Monitor, 28mm dp, NI, EStar | 469     |
| Daytek 1730 17" SVGA Monitor, 28mm dp, NI, EStar | 840     |
| Daytek 2102 21" SVGA Monitor, 28mm dp, NI, EStar | 1975    |
| ADI 4V 15" SVGA Monitor, 28mm dp, NI, EStar      | 529     |
| ADI 5V 17" SVGA Monitor, 28mm dp, NI, EStar      | 935     |
| Sony 15sx 15" SVGA Monitor, 25mm dp, NI, EStar   | 619     |
| Sony 15sf 15" SVGA Monitor, 25mm dp, NI, EStar   | 695     |
| Sony 17sf 17" SVGA Monitor, 25mm dp, NI, EStar   | 1315    |
| ATI Mach32 Accelerator w/1MB (ISA/VLB)           | 115     |
| Cirrus Logic 5446 PCI Accelerator w/1MB          | 95      |
| ATI WinBoost PCI Accelerator w/2MB Dram          | 169     |
| ATI Video Xpression PCI Accelerator w/2MB Dram   | 189     |
| ATI WinTurbo PCI Accelerator w/2MB/4MB Vram      | 325/525 |
| Matrox Millennium 3D PCI Accelerator w/2MB Vram  | 375     |



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### Hard Drive, Controller

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|---|-------|
| Western Digital 635MB EIDE HD, 10ms, 64k cache              | \$249 |
| Western Digital 850MB EIDE HD, 10ms, 64k cache              | 265   |
| Western Digital 1.2GB EIDE HD, 10ms, 64k (mode 4)           | 295   |
| Western Digital 1.6GB EIDE HD, 10ms, 128k (mode 4)          | 349   |
| Western Digital 2.1GB EIDE HD, 10ms, 64k                    | 439   |
| Western Digital 2.5GB EIDE HD, 10ms, 64k                    | 559   |
| Seagate 1GB SCSI-2 HD, 10ms                                 | \$389 |
| Seagate 2.1GB SCSI-2 HD, 10ms                               | 849   |
| *call for pricing on other Seagate/HP/Quantum/Conner drives |       |
| IDE 1:1 HD/FD Adapter w/2S, 1P, 1G                          | \$20  |
| Enhanced IDE HD/FD VLB Adapter w/Fast IO                    | 45    |
| Promise EIDEMax ISA Enhanced IDE Card w/Bios                | 65    |
| Promise 2300+ VLB Enhanced IDE Card w/Bios                  | 85    |
| Adaptec AH-2940 PCI SCSI-2 Controller Kit                   | \$365 |
| Adaptec AH-2940UW PCI Wide SCSI2 Controller Kit             | 445   |

### Modem, Mice, Scanner

|   |         |
|---|---------|
| USR Sportster 14.4 v.32bis Internal Fax/Modem     | \$135   |
| USR Sportster WinModem 28.8 Int Fax/Modem         | 198     |
| USR Sportster 28.8 Fax/Modem (Int/Ext)            | 235/259 |
| USR Sportster Voice 28.8 Voice/Fax/Modem(Int/Ext) | 259/295 |
| USR Sportster 28.8 v.34 PCMCIA Fax/Modem          | 395     |
| USR Courier 28.8 v. Everything External Fax/Modem | 539     |
| MS Compatible 3-button Serial Mouse               | 20      |
| Logitech Mouseman (Serial/Bus)                    | 75/ 95  |
| Logitech Trackman Marble                          |         |
| Microsoft Mouse v2.0 Serial/Bus                   | 125     |
| Logitech Scanman Easytouch (Parallel)             | 85/115  |
| Logitech Scanman Colour Handheld                  | 165     |
| Logitech Pagescan Colour SheetFed Scanner         | 275     |
| HP ScanJet 4s Personal Grey-Scale Scanner         | 539     |
| HP ScanJet 4p Personal Colour Scanner             | 429     |
| HP ScanJet 4c Full Page Colour Scanner            | 719     |
|   | 1389    |

### Tape, Case, Power

|  |      |
|--|------|
| Colorado Travan T1000 Tape Backup Drive (800MB Max.) |      |
| Colorado Travan T1000E Parallel Backup (800MB Max.)  |      |
| Colorado Travan T4000 SCSI Backup (4GB)              |      |
| HP SureStore 2GB Internal 4MM DAT Drive              |      |
| HP SureStore 2/4GB Internal 4MM DAT Drive            |      |
| HP SureStore 4/8GB Internal 4MM DAT Drive            |      |
| *call for External drives & special configurations   |      |
| 3M DC2120 tape cartridge 120MB capacity              | \$20 |
| 3M DC2120XL Tapes, (350MB Max.)                      | 25   |
| 3M MC3000XL Tapes, (1.4GB Max.)                      | 45   |
| 3M TR-1 Travan Tapes (800MB Max.)                    | 45   |
| 3M DG90M 4MM DAT Tapes                               | 20   |
| Mini-size 13" tower or Desktop w/200W PS             | \$95 |
| Mid-size 19" tower case w/200W PS                    | 125  |
| Full-size 25" tower case w/250W PS                   | 165  |
| Full-size 27" tower case w/300W PS 2 fans, wheels    | 245  |

### CD-ROM & Others

|   |                 |
|---|-----------------|
| Toshiba QuadSpin IDE CD-Rom Drive               | \$79            |
| Toshiba 6X IDE CD-Rom Drive                     | 99              |
| Toshiba 8X IDE CD-Rom Drive                     | 189             |
| Toshiba XM-3701 6.7X SCSI-2 CD-Rom Drive        | 349             |
| SoundBlaster 16 PNP Sound Card (OEM)            | 115             |
| Multimedia Stereo Speakers, 45Watts             | 50              |
| Sony CSS-8100 Speaker Set                       | 79              |
| Panasonic 1.44MB 3.5" Floppy Drive / with frame | \$35/40         |
| Fujitsu KB-8725 Keyboard, 104 Win '95           | 35              |
| Fujitsu KB-4725 Keyboard, 101 Key (Heavy Duty)  | 59              |
| MS "Natural" Keyboard, 104 Key Ergonomic        | 99              |
| Focus 2001/2 Keyboard, 101 Key Enhanced         | 55              |
| APC Personal SurgeArrest Strip w/Tel            | 45              |
| APC Professional SurgeArrest Strip w/Tel        | 65              |
| APC Back-UPS 280/400/450/600VA                  | 145/199/250/329 |
| APC Back-UPS Pro 280/420/650VA Win'95 Ready     | 199/329/399     |

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| Canon BJC-210 Colour Inkjet Printer                             | \$289     |
| HP DeskJet 600c Colour Inkjet Printer                           | \$369     |
| HP DeskJet 680c Colour Inkjet Printer                           | 469       |
| HP DeskJet 820c Colour Windows Printer                          | 539       |
| HP LaserJet 5L 1MB 4ppm, 600dpi                                 | 689       |
| HP LaserJet 5P 2MB/5MP PS, 3MB, 6ppm, 600dpi                    | 1245/1455 |
| HP LaserJet 5 2MB/5MP PS 4MB, 12ppm, 600dpi                     | 1825/2495 |
| *HP toner & inkjet cartridges available                         |           |
| Lexmark Optra E 1MB, 6ppm, 600dpi                               | \$749     |
| Lexmark Optra R+ 4MB, 16ppm, 1200dpi                            | 1875      |
| Lexmark WinWriter 150c Colour Windows Printer                   | 415       |
| *Ask about Lexmark's Educational Program                        |           |
| Printer Auto Switchboxes 2:1/4:1                                | \$30/50   |
| *Raven & Okidata Dot Matrix Printers available, ask for pricing |           |

### Computer Systems

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|---|--------|
| Pentium-75MHz PCI/ISA Computer System                     | \$1325 |
| Pentium-100MHz PCI/ISA Computer System                    | 1395   |
| Pentium-120MHz PCI/ISA Computer System                    | 1470   |
| Pentium-133MHz PCI/ISA Computer System                    | 1670   |
| Pentium-150MHz PCI/ISA Computer System                    | 1590   |
| Pentium-166MHz PCI/ISA Computer System                    | 1925   |
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# Business class

## Twenty-one that travel

BY CHRIS FISHER AND STEVE HALINDA

- AST Ascentia P30
- Dell Latitude LM P-100SD
- Eurocom 5400T
- Hyperdata 773
- IBM ThinkPad 755cx
- Impulse Reply 250 and CompuBook 650
- IPC OpenNote MX 5100, 5120T and 575T
- NEC Versa 2200C and 4000D
- Panasonic CF-41 and MK3
- Apple PowerBook 5300cs
- Sharp PC 9000 and HZ3070
- Pacific Royal Jetbook CD5 and Jetbook XP6
- Texas Instruments Extensa 560CDT
- Toshiba 410CDT and Tecra 700CT

fingers akin to a musician's.

Touchpads, however, are not all created equal. While the ones in this survey, for the most part, seem to be responsive and smooth to operate, we have seen examples in the past which didn't function to our expectations (ironically including the non-tappable touchpad in Apple's 5300-series portables).

Moreover, the pointing device is an item of personal preference. Personally, I have been wooed by the touchpad, like the familiarity of the trackball, and enjoy the extra design space that an eraser-head trackpoint implementation affords. Still, if I'm using a notebook for any length of time, I'm still tempted to rip a mouse off my desktop computer and use it rather than the default offering. Give me a full-blown mouse any day of the week.

Another progression in notebooks is the inclusion of CD-ROM drives on many more machines. The lower price of the drives seem to have spilled over into the notebook markets, enabling them to be sold with systems and as after-market additions without significantly moving the price point. These aren't the 2x CD-ROM drives that we were looking at only a few short months ago: we are beginning to see 4x and even 6x drives.

The hard drives on these business-class portables have also increased in size dramatically since our last visit to this product area. Notebooks seemed to embrace 240 MB and 500 MB hard drives well after they faded out of the desktop scene—not these notebooks. They are equipped with 800 MB and even 1 GB+ hard disks—big enough to store a wealth of programs and information.

### The captives

We started this survey with the intention of looking at business-class machines with a budget orientation, and asked for Pentium 75 to 100 MHz machines with 8 MB RAM. Several vendors showed a keen interest in sending in their newer, faster model, and we obliged them by looking at machines up to 120 MHz, as long as we also had a machine that fit the original specification.

We were not too sensitive with the price points, which allowed vendors to send in machines rich with top-of-the-line features, active-matrix screens, speedy CD-ROM drives and the like.

There are one or two machines notable in their absence. Hewlett Packard was in a transitional period with its notebook line, and didn't have a product. Compaq, too, is not represented in this month's lineup—a pity since both companies' products are popular choices for corporate users. Without further ado, on to the systems:

#### AST Ascentia P30

This is one of the slickest looking machines yet. The layout is tidy, clear and decidedly stylish. This 100 MHz Pentium system offered

top-notch performance, especially in light of the fact that it was only configured with its standard 8 MB RAM. The external complement of 256K cache appears to have boosted this machine's performance considerably.



The notebook is jammed with top-of-the-line features, such as a bright and beautiful 11.4" TFT LCD panel capable of 800x600 resolution, 1.2 GB hard disk, lithium-ion battery, infrared (IR) port, SoundBlaster-compatible audio, and 4x CD-ROM drive. As an added bonus, the keyboard provides the new keys designed for Windows 95.

Like many of the machines in this survey, the CD-ROM drive is used via the same bay as the floppy drive, meaning you cannot use the two devices in conjunction with each other. The unit comes with a three-year warranty, and despite the small and common shortcoming mentioned above, we give this AST a big two thumbs up.

#### Dell Latitude LM P-100SD



The demo machine we got from Dell displayed the message "For Development Only, Not For Resale" on boot up. This notebook blew through the benchmarks so quickly that we were checking to make sure that there had been no mistake with the processor speed. The 100 MHz machine beat the pants off of everything in the lab in terms of raw performance. So quick is this notebook, that it actually outpaces many desktop machines we have seen based on the same and even faster processors.

The unit's benchmark score was helped along with 16 MB RAM, a larger than standard configuration. An 11.4" TFT display provides ample viewing area; and with a 770 MB hard drive, storage will not be much of a concern. To round out the system, Dell has included 16-bit sound, along with a 4x CD-ROM drive to handle your multimedia needs. Also wor-

thy of mention is that this is one of two notebooks in this survey with a keyboard which incorporates the new Windows 95 keys.

#### Eurocom 5400T



The 5400T is one of the most interesting items in the survey. On the face of it, it is a pretty normal notebook with a Pentium 75 MHz processor, a 10.4" TFT LCD panel capable of 800x600 resolution, a 540 MB hard drive and 8 MB RAM. This machine has both an internal 4x CD-ROM drive and an internal floppy drive. The unit stands alone in the survey, being the only one that comes with a built-in gamepad in addition to its touchpad. The speed on this machine is decent, so, should you want to use it to do a little gaming on the road, it will meet your needs adequately.

#### Hyperdata 773 TFT



We have seen several notebooks from Hyperdata in the past. This one is similar in form and construction to the one discussed in our last roundup, but slightly more feature-rich. The heart of the system is a 100 MHz Pentium processor; it also boasts a 10.4" TFT screen capable of 800x600 resolution and an 810 MB hard drive. Pentium models come standard with 8 MB RAM, a SCSI port and built-in sound.

The Hyperdata 700 series come with a 6x CD-ROM drive, which is well above the average spin rate in today's notebooks. For presentation versatility, the 773 offers a video port to TV interface. The unit has a lower than average price tag and offers middling performance.

A couple of small drawbacks to this unit are that the floppy drive is external, and it is slightly more bulky than the average machine due to the way the CD-ROM drive has been implemented.

#### IBM ThinkPad 755CX

The first ThinkPad we received arrived with a faulty power cord. We didn't notice this

*Continued on page 31*



# Anovation

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|--------------|--------|--|
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| P133MHz..... | \$1825 |  |
| P150MHz..... | \$1955 |  |
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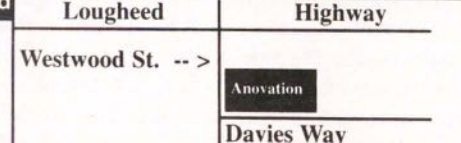
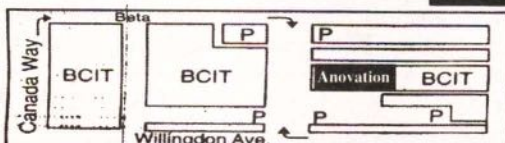
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problem until after we had handled the machine for a couple of hours. We'd had it plugged in but didn't notice that it was running off the batteries until it decided to quit. This is not, however, an indication of the quality of these devices, as the power connector looked as though it had been repaired at least once already and was not a new one that ships with the notebook. One can expect wear and tear on these demo models, especially those passing through several hands along the way.

From IBM's familiar and distinctive ThinkPad line, we reviewed the top-of-the-line 755CX model, complete with a 10.4" TFT LCD, a 1.1 GB hard drive, 8 MB RAM, a lithium-ion battery and an internal 14.4K modem. IBM shows its continued commitment to OS/2 with the ThinkPad line shipping with both Windows 3.11 and OS/2 installed. The 755CX's performance is at the higher end of the scale for Pentium 75 MHz-based machines, but its premium price pushes it off the map, coming in at around double the figures of comparable systems. To be fair to IBM, the system comes with a strong warranty, the display is sharp, and it does come with some extra software. However, our honest opinion is that the ThinkPad 755CX is a nice status symbol, but you could get a whole lot more notebook for this kind of money.

#### Impulse Reply 250 and CompuBook 650



Impulse divides its computer line into three categories: value-oriented Reply systems, mid-range CompuBooks, and high-performance, desktop-

replacement Powerlites. We took a look at two brand new notebooks that Impulse is adding to its lineup.

The CompuBook 650, the higher end of the two models, is powered by a 120 MHz Pentium processor. The standard unit comes with a 10.4" TFT screen, an 810 MB hard drive, and 8 MB RAM; however, the unit we reviewed was equipped with 16 MB. The floppy drive is swappable and the common bay is used to house the unit's 4x CD-ROM drive. The 650 is quite petite in light of the fact that it is so feature-rich. Benchmarks were not fabulous for this machine, but were certainly acceptable, and the price point, given all its extras, is quite reasonable.

The Reply 250 differs from the older Reply 200; for example, gone is the trackball in favor of the ever-persuasive touchpad. This value-oriented notebook still manages to pack some punch with a similar configuration to the CompuBook, a slower 100 MHz processor and no CD-ROM drive. This translates into a savings of a thousand dollars over the 650.

#### IPC OpenNote MX 5100, MX 5120T, MX575T

IPC shipped us three notebooks from its current lineup. The MX 5100 and the MX5120T are identical except for the 5120's

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| 16MB 72pin SIMM RAM              |               | *256K Pipeline Burst Cache*      |                    | 850MB Enhanced IDE Hard Drive  |               |
| *1.08GB Enhanced IDE Hard Drive* |               | 8MB 72pin SIMM RAM               |                    | 1.44MB Floppy Drive            |               |
| 1.44MB/2.88MB Floppy Drive       |               | *1.08GB Enhanced IDE Hard Drive* |                    | Cirrus Logic/S3 1MB Video Card |               |
| PCI Cirrus Logic Video Card 1MB  |               | 1.44MB/2.88MB Floppy Drive       |                    | I/O with 2 Serial & 1 Parallel |               |
| EIDE 2x16550 UART Chip & LPT     |               | 64 Bit PCI SVGA 1MB              |                    | 14" SVGA Monitor .28dp N.I.    |               |
| 14" SVGA Monitor .28dp N.I.      |               | EIDE 2x16550 UART Chip & LPT     |                    | Enhanced 101 Keyboard          |               |
| Enhanced 101 Keyboard            |               | 14" SVGA Monitor .28dp N.I.      |                    | Tower Case w/230W Power Supply |               |
| Tower Case w/230W Power Supply   |               | Enhanced 101 Keyboard            |                    | 3 Buttons Mouse & Mouse Pad    |               |
| 3 Buttons Mouse & Mouse Pad      |               | Tower Case w/230W Power Supply   |                    |                                |               |
|                                  |               | 3 Buttons Mouse & Mouse Pad      |                    |                                |               |
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| 486 SYSTEM   | COLOR NOTEBOOK BLOWOUT SPECIAL  | HOT ITEMS!   |
|--|---|--|
| 486-50/66MHz Vesa System ..... <b>\$599</b><br>4MB SIMM RAM<br>105MB IDE Hard Drive<br>1.44MB Floppy Drive<br>1MB SVGA Card<br>I/O with 2 Serial & 1 Parallel<br>Enhanced 101 Keyboard<br>Tower Case w/230W Power Supply<br>No Monitor | 486DX2-66MHz<br>9.5" Color Display<br>4MB RAM, 170MB Hrad Drive<br>1.44MB Floppy Drive<br>Battery & Carrying Case<br><b>\$1850</b><br><b>LTD. QUANTITY ITEMS!!!</b><br>3Com UTP 16 Bit Ethernet Card, oem ..... \$99<br>SMC UTP 16 Bit Ethernet Card, oem ..... \$99<br>NEC 486DX2-66 Desktop Demo ..... \$999<br>VESA S3 SVGA Card w/1MB RAM ..... \$99<br>PCI Cirrus Logic 64 Bit<br>SVGA Card w/1MB RAM ..... \$69 | 14.4K Voice/Fax/Modem ..... \$75<br>28.8K Fax/Modem ..... \$175<br>Sony 2.88 Floppy Drive ..... \$68<br>72 pin 4MB RAM ..... \$58<br>13/17/19" Tower Case ..... \$55/65/75   |
|  |   | MULTIMEDIA   |
|  |   | 4x CD-ROM + 16 Sound Card<br>(incl. Speakers & 5 CD Titles) ..... \$235<br>Creative SB16 PNP ..... \$119<br>6x CD ROM + 16 Sound Card<br>(incl. Speakers x 5 CD titles) ..... \$299<br>Sound Blaster AWE 52 +ASP ..... \$299 |

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NEC XV 15/ XV17 ..... \$669/1435  
MAG DX 15/17 ..... \$495/909

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CANON BJ 210 Color Printer ..... \$249  
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USR 28.8K int. FAX/VOICE/DSVD ..... \$399  
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PCMCIA fax modem from ..... \$145

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1.2MB/1.44MB Floppy Drive ..... \$52/38  
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SEAGATE 1.2 GB / 1.6 Gb HD ..... \$289/329  
2 GB EIDE Hard Drive ..... \$389

#### Controller Cards

16bit ISA IDE w/2S.1P.1G ..... \$19  
Enhanced IDE w/16550 UART ..... \$40  
Ultra Enhanced IDE sup. 2.88MB ..... \$125  
ISA Adaptec SCSI 1520 ..... \$95

#### Mice/Keyboards

Microsoft/Logitech serial mouse ..... \$35  
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NorthGate 101 keyboard ..... \$95

#### Scanners

Logitech 256Grey Handheld ..... \$145  
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HP 4S Mono Page Fit ..... \$399  
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HP 4C Color Flatbed ..... \$1299

#### Video Cards

1MB SVGA ISA/VLB ..... \$89  
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ATI March 64 ..... \$139/168  
Matrox Millenia 2M/4MW ..... \$396/630  
Diamond Edge 3D ..... \$349/398

#### Tape Drives

Colorado T1000 800MB ..... \$228  
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Colorado Tracker Ext. 350 MB ..... \$269

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Desktop Case w/200W power supply ..... \$55  
King Tower, 3 Fans, wheels 250W ..... \$595  
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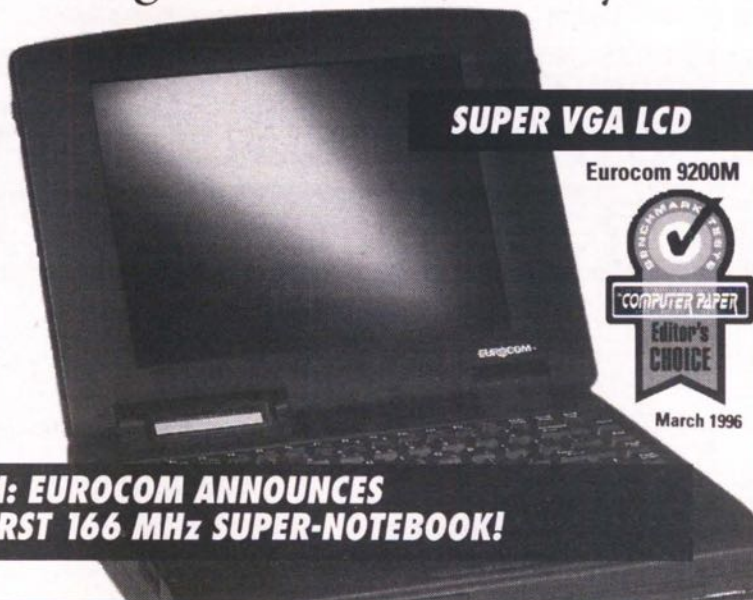
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IPC  
5120T



faster processor and TFT screen. The LCDs on these units are 11.3", giving a resolution of 800x600. They come with 8 MB RAM, a 520 MB hard drive (smaller than average), 16-bit sound, and are powered by NiMH batteries. The units offered good speed, helped by their large 16 MB complement of RAM. However, the 120 MHz machine only turns in a score four percent faster than the 100 MHz-based system. This minor speed improvement, along with the nicer TFT screen, demands a \$1,300 premium, which seems a little on the steep side. The OpenNote MX575T is the least expensive notebook we looked at in this survey. For just under \$2,700, it still manages to pack a 10.4"

IPC  
575T



active-matrix LCD panel, a Pentium 75 MHz processor, 8 MB RAM, and a 520 MB hard drive. The unit is comparatively light and uses a micro joystick, which is an interesting and usable

twist on the common eraser-head type device. This is another unit that comes equipped with a built-in SCSI port. The floppy for this machine is, unfortunately, external, but at the machine's price, it is hard to grumble. All the IPC machines came with a car adapter, Microsoft productivity pack and a three-year warranty.

## NEC Versa 2200C and 4000D

Two of NEC's coveted systems made it in for review. NEC actually had to send two 4000Ds, as the first one we received had the CMOS security enabled, and no one seemed to know the password. This proved to be a problem when we tried to set up a new operating system on the machine and it prevented us from benchmarking it. Not to worry, however—we were whisked another machine right at deadline, and we added the scores at the last minute.

NEC  
Versa  
2200C



The Versa 2200C is the slightly more value-oriented machine of the pair reviewed. It has good eye appeal and would look right at home on Captain Picard's desk on the set of Star Trek. It is probably not fast enough for the captain, however. It is powered by a Pentium 75 MHz CPU, has a 9.5" TFT display, an 810 MB hard drive, and uses a lithium-ion battery. The lack of an external cache was quite detrimental to

Continued on page 34

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\$995.00

## Faronics 5100-M8

Intel Pentium 100MHz processor  
8MB of EDO RAM  
256k pipeline burst cache  
1.44MB floppy drive  
1.08GB EIDE harddrive  
Quad speed (4x) PnP CD-ROM  
1MB PCI video card  
Fujitsu Windows 95 keyboard  
Serial mouse  
13" Tower case



**\*Monitor is not included**

Please select monitor  
of choice:  
14" monitor \$330  
15" monitor \$460  
17" monitor \$920

2 year parts and labour warranty

Windows 95 OEM (CD version) \$ 95 with system  
US Robotics 28.8 int. fax/modem \$199 with system  
Hewlett Packard 680C \$429 with system  
Axion Internet Access Kit FREE with system  
Leasing Available (\$99 value)

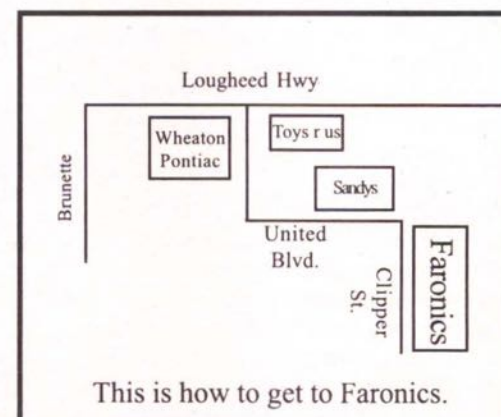
## Faronics System Upgrades

Pentium 133 \$187.00  
Pentium 150 \$340.00  
Pentium 166 \$585.00

\*Same configuration as 5100-M8

| Upgrades:                       | Add:  |
|---------------------------------|-------|
| 16MB of EDO RAM                 | \$ 95 |
| 1.28GB harddrive                | \$ 48 |
| 1.6GB harddrive                 | \$ 84 |
| 2.0GB harddrive                 | \$175 |
| Hex speed (6x) CD-ROM           | \$ 30 |
| ATI Mach 64 Xpression 2MB       | \$136 |
| Soundblaster 16 comp. soundcard | \$ 53 |
| Creative Labs Soundblaster 16   | \$108 |
| Microsoft Natural keyboard      | \$ 50 |
| 40W speakers                    | \$ 35 |
| Sony speakers w/stand           | \$ 79 |

\* Ask about our price on special software bundles with a Faronics system.



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TRITON Chipsets, 1.44MB Floppy  
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16MB EDO RAM,

1.2GB EIDE HARD DRIVE

CIRRUS LOGIC 64-bit MPEG Video, 1mb  
14" SVGA Non-Int. Colour Monitor, .28dp  
Built-In PCI EIDE Controller, 2S/1P  
19" CSA Approved PS Med. Tower Case  
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Sound Blaster 16 PNP Sound Card

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8MB RAM, 1.44MB FLOPPY  
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850MB EIDE HARD DRIVE

64-BIT SVGA PCI GRAPHIC CARD, 1MB

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256K PIPELINE BURST CACHE

2.1GB EIDE HARD DRIVE

Diamond Stealth 64 PCI Video, 2mb Vram

15" SONY SVGA Non-Int. Monitor, .25dp

Built-In PCI EIDE Controller, 2S/1P

19" CSA Approved PS Med. Tower Case

104-Key WINDOWS 95 Keyboard

**\$2,499**

FREE  
mouse & pad

### INTEL 120 MHZ PENTIUM® PROCESSOR

HEAT SINK W/ COOLING FAN  
8MB EDO Ram, 1.44 MB Floppy  
256K PIPELINE BURST CACHE

1.2GB EIDE HARD DRIVE

Diamond Stealth 64 Accelerated Video, 1mb

15" SONY SX SVGA Monitor, .25dp

Built-In PCI EIDE Controller, 2S/1P

19" CSA Approved PS Med. Tower Case

104-Key Enhanced Keyboard

**\$1,699**

FREE  
mouse & pad

### INTEL 166 MHZ PENTIUM® PROCESSOR

HEAT SINK W/ COOLING FAN

16MB EDO Ram, 1.44MB Floppy

256K PIPELINE BURST CACHE

1.2GB EIDE HARD DRIVE

Diamond Stealth 64 Accelerated Video, 1mb

14" SVGA Non-Int. Monitor, .28dp

Built-In PCI EIDE Controller, 2S/1P

19" CSA Approved PS Med. Tower Case

104-KEY Windows 95 Keyboard

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## 6X FAMILY MULTIMEDIA

### 75MHZ INTEL PENTIUM® PROCESSOR

HEAT SINK W/ COOLING FAN  
8MB RAM, 256K EXT. CACHE

850mb Hard Disk, 1.44mb Floppy

64-BIT PCI GRAPHIC CARD, 1MB DRAM

14" SVGA Non-Int. Monitor, .28dp

Built-In PCI EIDE Controller, 2S/1P

13" CSA Approved PS Med. Tower Case

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Sound Blaster 16 compatible Sound Card

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SB Compatible 16-bit SOUND CARD  
Pair of Shielded Speakers  
GROLIER ENCYCLOPEDIA 94  
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6X Speed Int. cd rom drive  
Sound Blaster 16 Sound Card  
GROLIER ENCYCLOPEDIA 1996,  
ROBOCOP 3D  
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## Business class

Continued from page 32

this machine's performance, and it turned in benchmarks well below the norm.

The 4000D features a larger screen, comes with a 540 MB hard drive, 8 MB RAM, has 16-bit sound capabilities and an IR port, which is lacking in the latter model. At 2.8 kg (6.3 lb.), it is about 60 g (a couple of ounces) lighter than the 2200C. If you can live without the TFT, the small premium this unit demands may well be

NEC  
Versa  
4000D

worth it as the 4000D is a faster machine. Both systems come with a three-year warranty and

arrive in a rugged, molded-plastic carrying case. The cases may not look as spiffy as the average canvas carrier, but they certainly feel as if they afford more protection to the notebooks.

## Pacific Royal Jetbook CD5 and XP6

The CD5 is one of very few notebooks we have seen that has the convenience of both a 4x CD-ROM drive and an internal floppy drive built into the case. This is quite a feat when you consider that the CD5 is no bigger than most of the other notebooks seen in this lineup. The notebooks use standard DIMMs,

CD5



which are cheaper and easier to get than proprietary notebook RAM.

The unit's processor is upgradable to 133 MHz using a standard desktop central processing unit (CPU). The use of standard CPUs in notebooks does, however, have the drawback of reducing battery life. Both units from Pacific Royal come with a 10.4" TFT LCD panel, an 810 MB hard drive, 8 MB RAM and 16-bit sound.

XP6



The XP6 is similar to the CD5 in its specifications, but does not come with the capability to take an internal CD-ROM drive. The unit is slightly smaller and uses a trackpad, rather than the trackpoint device found in the CD5. Neither units' performance was particularly breathtaking, but not so bad as to be considered unacceptable. The XP6 had trouble completing the word-processing section of our benchmark suite, which is not too surprising as this unit is a pre-production demo model.

## Panasonic CF-41 MK III



Panasonic's notebooks are slightly more bulky than the average machine. Panasonic is one of very few companies that goes the way of not trading off performance

and features for size and weight. And indeed their notebooks are heavyweights in every sense. They are heavy on features, heavy on performance and physically heavy.

We first saw the MK1 offering from Panasonic way back in November of 1995, based on a Pentium 75 MHz processor. The line has since been revamped, and the newer model, the MK III we received, was equipped with a peppy 120 MHz CPU. The LCD panel on the unit is a 12.1" TFT with 800x600 resolution. This is huge, bright and beautiful by today's standards. The machine came standard with 16 MB RAM and a 1.35 GB hard drive.

It is one of only two units that boasts both a built-in floppy and a 4x CD-ROM. The performance on this machine is unsurpassed, except by the Dell Latitude LM (which is what a statistician might call a bit of an outlier). All the features of this laptop come at two costs. The first is, as mentioned earlier, the weight of the machine, which is a good 900 g (2 lb.) heavier than most other travel mates. The second is the price: the CF-41 goes for \$8,900. ➤



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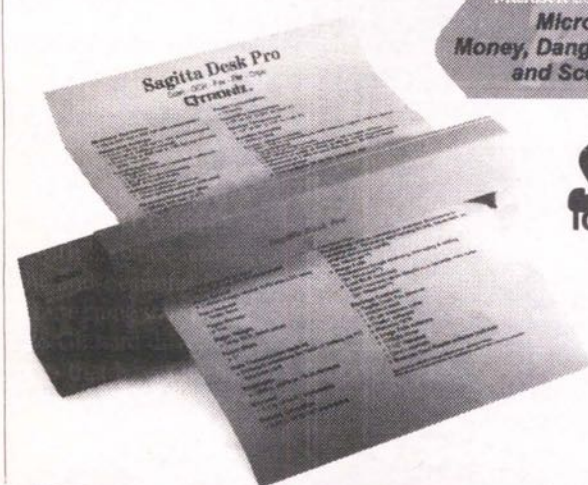
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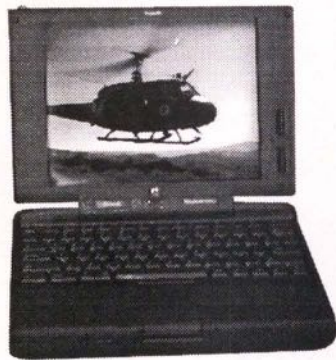
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PowerBook 5300CS



For those of you who simply must have a Macintosh computer, here is the sporty model you're looking for. The PowerBook 5300CS we reviewed is equipped with a 100 MHz PowerPC 603e processor, a 10.4" DSTN LCD panel, a 750 MB hard disk and 16 MB RAM. Naturally, the PowerBook comes with

Apple PowerBook 5300cs Spec Sheet

|                        |                       |
|------------------------|-----------------------|
| Processor (MHz)        | PowerPC 603e 100      |
| Screen                 | 10.4" DSTN            |
| Pointing device        | touchpad              |
| Hard disk              | 810 MB                |
| RAM (standard/max)     | 16/64 MB              |
| Weight, kg (lb.)       | 2.9 (6.4)             |
| Battery type           | NiMH                  |
| Dimensions cm (WxDxH)  | 29.2x21.5x5.5         |
| Dimensions in. (WxDxH) | 11.5x8.5x2.2          |
| Keyboard               | 76/77 key             |
| Floppy drive           | internal              |
| Palm rest cm (in.)     | 3.4                   |
| Max resolution         | 640x480               |
| Audio                  | 16-bit                |
| PC card slots          | 2                     |
| Extras                 | IR port               |
| Contact                | 800-665-2775 ext. 450 |
| Sugg. retail price     | \$3,399               |
| Warranty               | 1 year                |

16-bit sound capability. The estimated street price, at \$3,400, is surprisingly competitive, making it a reasonable alternative to a PC notebook. The PowerBook offers the convenience of an external SCSI adapter, an IR port and PC-card support. The 5300CS has that polished look, typical of Apple's products.

Sharp PC 9000 and HZ3070

These two notebooks from Sharp began shipping in Canada at the end of May. The models we received for review were pre-production units, and as such, they were understandably unable to complete the benchmark suite. Both machines are powered by a Pentium 100 MHz CPU, but the PC 9000 is the higher end of the two. The unit consists of an 11.3" TFT screen with 800x600 resolution, a 1.1 GB hard drive, 8 MB RAM and a lithium-ion battery. The machine is multimedia ready with 16-bit sound and a 4x CD-



ROM drive that fits into the floppy bay. The HZ3070 has an 11.3" DSTN screen, a 772 MB hard disk and a lithium-ion battery. This is one of the few notebooks that use EDO

memory, and is one of only two machines we looked at that come standard with 16 MB. The machine is smaller and lighter than just about everything else in the survey.

As these machines were prototypes, and we didn't obtain benchmark results for either of them, we will have to pass on any

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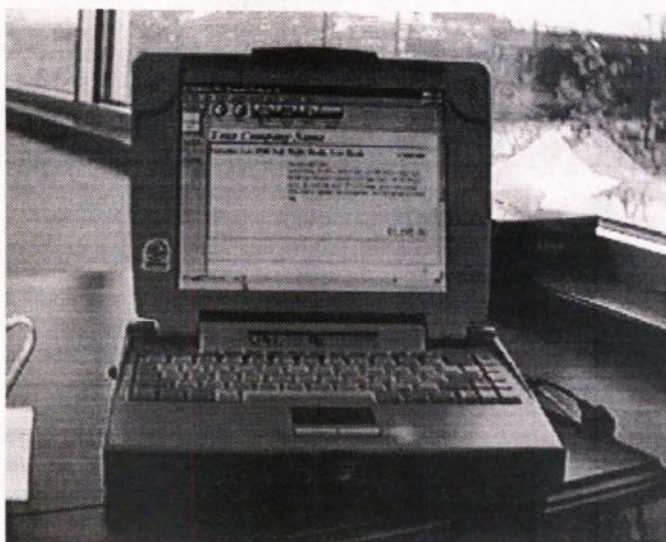
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|------------------------|----------------------|-----------------------------|-------------------------------|-------------------------------|------------------------|----------------------|--------------------------|-------------------------|------------------------|------------------------|
| Processor (MHz)        | Pent.100             | Pent. 100                   | Pent. 75                      | Pent. 100                     | Pent. 75               | Pent. 100            | Pent. 120                | Pent. 120               | Pent. 100              | Pent. 75               |
| Screen                 | 11.4" TFT            | 11.4" TFT                   | 10.4" TFT                     | 10.4" TFT                     | 10.4" TFT              | 10.4" TFT            | 10.4" TFT                | 11.3" TFT               | 11.3" DSTN             | 10.4" TFT              |
| Pointing device        | touchpad             | touchpad                    | touchpad                      | Trackpoint                    | Trackpoint             | touchpad             | touchpad                 | touchpad                | touchpad               | Micro Joystick         |
| Hard disk              | 1.2 GB               | 770 MB                      | 540 MB                        | 800 MB                        | 1.1 GB                 | 810 MB               | 810 MB                   | 520 MB                  | 520 MB                 | 520 MB                 |
| RAM (standard/max)     | 8/40 MB              | 16 MB                       | 8/32 MB                       | 8/64 MB                       | 8 MB                   | 8/40 MB              | 8/40 MB *                | 8/64 MB *               | 8/64 MB *              | 8 MB                   |
| Weight, kg (lb)        | 3.3 (7.3)            | 3.4 (7.4)                   | 3.2 (7)                       | 3 (6.6)                       | 2.9 (6.3)              | 3 (6.6)              | 3 (6.6)                  | 3.5 (7.7)               | 3.5 (7.7)              | 2.3 (5.06)             |
| Battery type           | lithium ion          | lithium ion                 | NiMH                          | NiMH                          | lithium ion            | NiMH                 | NiMH                     | NiMH                    | NiMH                   | NiMH                   |
| Dimensions cm (WxDxH)  | 28.5x22.8x5.7        | 29.7x22.3x4.8               | 29.7x22.8x5.58                | 29.4x22.6x6                   | 29.7x20.8x5            | 29.7x22.3x4.5        | 29.2x22.3x4.8            | 30.2x23.8x5.7           | 30.2x23.8x5.7          | 28.9x22.6x5.3          |
| Dimensions in. (WxDxH) | 11.25x9x2.25         | 11.7x8.8x1.9                | 11.7x9x2.2                    | 11.6x8.9x2.4                  | 11.7x8.2x2             | 11.7x8.8x1.8         | 11.5x8.8x1.9             | 11.9x9.4x2.25           | 11.9x9.4x2.25          | 11.4x8.9x2.1           |
| Keyboard               | 81/82 key            | 87 key                      | 86 key                        | 86 key                        | 85 key                 | 85 key               | 85/86 key                | 85/86 key               | 85/86 key              | 84 key                 |
| Floppy drive           | internal/removable   | internal                    | internal/removable            | external                      | internal               | internal             | internal/removable       | internal                | internal               | external               |
| Palm rest cm (in.)     | 6.35 (2.5)           | 7.36 (2.9)                  | 7.87 (3.1)                    | 5.08 (2)                      | 3.3 (1.3)              | 8.25 (3.25)          | 8.12 (3.2)               | 7.11 (2.8)              | 7.11 (2.8)             | 7.62 (3)               |
| Max resolution         | 800x600              | 800x600                     | 800x600                       | 800x600                       | 800x600                | 640x480              | 800x600                  | 800x600                 | 800x600                | 640x480                |
| Audio                  | 16-bit               | 16-bit                      | 8-bit                         | 8-bit                         | 2                      | 16-bit               | 16-bit                   | 16-bit                  | 16-bit                 | 2                      |
| PC card slots          | 2                    | 2                           | 2                             | 2                             | 2                      | 2                    | 2                        | 2                       | 2                      | 2                      |
| Extras                 | 4x CD-ROM<br>IR port | 4x CD-ROM<br>IR port        | 4x CD-ROM<br>IR port, gamepad | 6x CD-ROM<br>video to TV port | 14.4K modem<br>IR port | IR port              | 4x CD-ROM                | car adapter<br>IR port  | car adapter<br>IR port | car adapter<br>IR port |
| Windows Benchmarks**   |                      |                             |                               |                               |                        |                      |                          |                         |                        |                        |
| Word processing        | 214.13               | 293.15                      | 134.20                        | 171.09                        | 167.87                 | 174.23               | 233.13                   | 213.10                  | 208.43                 | 118.91                 |
| Spreadsheet            | 290.30               | 303.27                      | 186.23                        | 236.04                        | 215.65                 | 190.95               | 277.85                   | 253.00                  | 238.77                 | 163.34                 |
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\* System tested with 16 MB \*\* For benchmark scores, the higher numbers indicate better performance.

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|------------------------|-------------|---------------|----------------------|-------------|---------------|----------------------|---------------|----------------------|----------------------|---------------|
| Processor (MHz)        | Pent. 75    | Pent. 75      | Pent. 100            | Pent. 100   | Pent. 120     | Pent. 100            | Pent. 100     | Pent. 75             | Pent. 90             | Pent. 120     |
| Screen                 | 9.5" TFT    | 10.4" DSTN    | 10.4" TFT            | 10.4" TFT   | 12.1" TFT     | 11.3" DSTN           | 11.3" DSTN    | 10.4" TFT            | 11.3" TFT            | 11.3" TFT     |
| Pointing device        | touchpad    | touchpad      | Trackpoint           | touchpad    | trackball     | touchpad             | touchpad      | touchpad             | Trackpoint           | Trackpoint    |
| Hard disk              | 810 MB      | 540 MB        | 810 MB               | 810 MB      | 1.35 GB       | 1.1 GB               | 772 MB        | 1.2 GB               | 810 MB               | 1.1 GB        |
| RAM (standard/max)     | 8/40 MB     | 8/40 MB       | 8/40 MB *            | 8/40 MB *   | 16 MB/32 MB   | 8/40 MB              | 16/40 MB EDO  | 8/40 MB EDO          | 8/32 MB (EDO)        | 16/48 MB      |
| Weight, kg (lb.)       | 2.9 (6.5)   | 2.9 (6.3)     | 3.6 (7.92)           | 2.6 (5.7)   | 4 (8.8)       | 3.3 (7.3)            | 2.6 (5.7)     | 2.9 (6.4)            | 3.4 (7.5)            | 3.5 (7.6)     |
| Battery type           | lithium ion | lithium ion   | NiMH                 | NiMH        | NiMH          | lithium ion          | lithium ion   | NiMH                 | lithium ion          | lithium ion   |
| Dimensions cm (WxDxH)  | 29.9x23.8x5 | 29.7x24.1x5.3 | 29.4x24.1x5          | 28.9x22.3x5 | 29.7x23.6x5.8 | 29.2x22x5.5          | 28.4x22.6x3.3 | 29.4x22.8x5.5        | 29.9x22.8x5.33       | 29.7x22.8x5.8 |
| Dimensions in. (WxDxH) | 11.8x9.4x2  | 11.7x9.5x2.1  | 11.6x9.5x2           | 11.4x8.8x2  | 11.7x9.3x2.3  | 11.5x8.7x2.2         | 11.2x8.9x1.3  | 11.6x9x2.2           | 11.8x9x2.1           | 11.7x9x2.3    |
| Keyboard               | 83 key      | 83 key        | 84 key               | 86 key      | 84 key        | 84 key               | 84 key        | 84 key               | 82 key               | 82 key        |
| Floppy drive           | internal    | internal      | internal             | internal    | internal      | internal/removable   | internal      | internal/removable   | internal/removable   | external      |
| Palm rest cm (in.)     | 8.89 (3.5)  | 8.63 (3.4)    | 5.08 (2)             | 8.32 (3.3)  | 2.79 (1.1)    | 7.36 (2.9)           | 7.87 (3.1)    | 7.62 (3)             | 8.63 (3.4)           | 8.63(3.4)     |
| Max resolution         | 640x480     | 640x480       | 800x600              | 800x600     | 800x600       | 800x600              | 800x600       | 640x480              | 800x600              | 800x600       |
| Audio                  | —           | 16-bit        | 16-bit               | 16-bit      | 16-bit        | 16-bit               | 16-bit        | 16-bit               | 16-bit               | 16-bit        |
| PC card slots          | 2           | 2             | 2                    | 2           | 2             | 2                    | 2             | 2                    | 2                    | 2             |
| Extras                 |             | IR port       | 4x CD-ROM<br>IR port | IR port     | 4x CD-ROM     | IR port<br>4x CD-ROM | IR port       | 4x CD-ROM<br>IR port | 4x CD-ROM<br>IR port | IR port       |

## Windows Benchmarks\*\*

|                      |        |        |        |        |        |     |     |        |        |        |
|----------------------|--------|--------|--------|--------|--------|-----|-----|--------|--------|--------|
| Word processing      | 100.53 | 147.54 | 127.87 | N/A    | 249.58 | N/A | N/A | 167.27 | 222.58 | 235.85 |
| Spreadsheet          | 140.10 | 199.75 | 163.69 | 149.09 | 290.49 | N/A | N/A | 212.69 | 243.91 | 276.93 |
| Database             | 75.90  | 98.53  | 145.78 | 219.42 | 273.05 | N/A | N/A | 126.58 | 272.30 | 279.66 |
| Desktop graphics     | 203.05 | N/A    | 256.34 | N/A    | 377.66 | N/A | N/A | 247.60 | 303.77 | 371.15 |
| Desktop presentation | 101.62 | 139.24 | 127.13 | 183.87 | 241.67 | N/A | N/A | 162.43 | 221.28 | 226.90 |
| Desktop publishing   | 101.19 | 141.27 | 121.48 | 174.40 | 223.29 | N/A | N/A | 162.03 | 208.79 | 220.82 |
| Overall Sysmark      | 115.49 | N/A    | 157.90 | N/A    | 283.36 | N/A | N/A | 177.65 | 251.45 | 275.46 |

|                    |              |              |              |              |              |              |              |              |              |              |
|--------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Contact            | 800-366-0476 | 800-366-0476 | 800-538-8212 | 800-538-8212 | 800-742-8086 | 800-567-4277 | 800-567-4277 | 800-848-3927 | 800-387-5645 | 800-387-5645 |
| Sugg. retail price | \$3,495      | \$3,657      | \$5,345      | \$4,620      | \$8,900      | \$4,499      | \$4,289      | \$4,300      | \$6,869      | \$9,359      |
| Warranty           | 3 years      | 3 years      | 3 years      | 3 years      | 1 year       | 3 years      | 1 year       | 1 year       | 3 years      | 3 years      |

\* System tested with 16 MB \*\* For benchmark scores, the higher numbers indicate better performance.

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Windows 95, 6.3 lb  
Built-in Sound & Speakers  
3 yr ACER Warranty **\$4499**  
(4x internal CD ROM.....\$459)

**ACER Pentium NoteLIGHT**  
Pentium Processor 100 Mhz  
10.4" Dual ScanColor  
840 MB Hdisk, 8 MB RAM  
Touch Pad, 1.44 Floppy Drive  
5.3 lb, NiMH Battery  
Windows 95, PMCIA Slots  
Built-in Sound & Speakers  
3 Yr ACER Warranty **\$2799**  
(16 MB, Active Color.....\$3599)

**Pentium P100 System**  
8MB RAM memory  
1.08 GB HD, 1.44B FD  
Enhanced IDE/IO Controller  
Cirrus Mpeg 1MB PCI  
14" NI LowRad SVGA Monitor  
Win 95 Keyboard, mouse  
High Speed Serial Ports  
Pipeline Burst 256k Cache  
Mini Tower Case **\$1369**

**Pentium P100 Multimedia**  
16MB EDO SIMM RAM  
1.08GB HD, 1.44MB FD  
Enhanced IDE/IO Controller  
Cirrus Mpeg 1MB PCI  
4X CD-ROM, Soundblaster 16  
Grolier, Atlas, Chess 4000, Animals  
Speakers & Mouse  
Pipeline Burst Cache  
14" NI LR SVGA Monitor **\$1669**

### Accessory Specials!

|  |              |
|--|--------------|
| <b>Canon BJC210 Colour Inkjet Printer</b>                  | <b>\$289</b> |
| <b>Canon BJC4100 Color Inkjet Special Purchase</b>         | <b>\$399</b> |
| SoundBlaster 16, 4x CD-ROM Drive, 25 watt Speaker Pkg.     | \$195        |
| Acer 6X EIDE CD-ROM Drive, with audio cable, 600kb/s       | \$102        |
| Acer 8X EIDE CD-ROM Drive, with audio cable, 900kb/s       | \$189        |
| <b>Modems</b>  |              |
| MegaHertz 28.8 PCMCIA Fax/Modem                            | \$359        |
| U.S. Robotics 28.8 Windows Fax/Modem Internal              | \$189        |
| U.S. Robotics 33.6 External Sportster Fax/Modem            | \$248        |
| U.S. Robotics 33.6 Voice Internal Fax/ModemDuplex Phone    | \$269        |
| Motorola ISDN Internal Modem 128k                          | \$499        |
| <b>Raven Printers &amp; Fax Machines</b>                   |              |
| Raven LS3 6ppm Laser Windows Printer, 256K, 600dpi         | \$459        |
| Raven LS6 6ppm Laser Windows Printer, 512K, 1200dpi        | \$579        |
| Raven QuickFax 1, paper cutter, anticurl, distinctive ring | \$395        |
| Raven QuickFax 2, paper cutter, digital answer machine     | \$449        |
| <b>Brother Printers</b>                                    |              |
| Brother HL660, 6ppm laser, 2MB RAM, 600dpi                 | \$659        |
| Brother HL1260, 2MB, 12ppm, 1200dpi, postscript laser      | \$1599       |

### Pentium & 6x86 Multimedia System Features

- Windows 95 with tutorial CD
- NEC/ IBM 1.6 G or Western Digital 1.2G
- 16MB EDO SIMM RAM 72 pin
- Logitech 2button Mouse w/ pad
- 15" tower case for extra capacity
- Grolier, US/World Atlas, Mavis, Animals, ChessMaster 4000, Reader Rabbit
- Cirrus 5446 2MB EDO PCI Graphics Crd.
- Triton Chipset, Plug & Play BIOS
- 1.44MB Floppy Drive, Windows keyboard
- 14" Noninterlaced SVGA Monitor, LR
- Pipeline Burst Cache 256K, Upgradeable
- Supra Express 28.8 Voice/Fax/Mod \$169

### Options: (With the Purchase of System)

- Upgrade to 32MB EDO RAM \$229
- West Digital 2.1GB HD \$139
- Proview 15" SVGA 28 \$125
- MAG 1795 26dp 17" SVGA \$589
- ATI Mach 64 VideoExpression 2MB \$119
- ATI Mach 64 Win Turbo 2MB VRAM \$239
- Matrox Mellenium 2MB VRAM \$349
- Supra Express 28.8 Voice/Fax/Mod \$169

**Comes with**  
**16MB EDO RAM, 6x CD ROM Drive,**  
**Sound Blaster 16, Windows 95**

| CPU Speed |        | Intel Pentium Price | Cyrix 6x86 Price |
|-----------|--------|---------------------|------------------|
| P120      | 120MHz | \$1979              | \$1899           |
| P133      | 133MHz | \$2079              | \$1959           |
| P150      | 150MHz | \$2229              | \$2029           |
| P166      | 166MHz | \$2459              | \$2299           |
| P200      | 200MHz | \$3999              | ← Pentium Pro    |

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solid judgment of them. However, our cursor look at them does lead us to believe they are good candidates to consider if you're in the market.

Texas Instruments Extensa 560CDT

A thing of beauty, the Extensa is powered by a



Pentium 75 processor, has a 1.2 GB hard drive and is one of the few notebooks that come with EDO RAM (8 MB) standard. The 560CDT has a lot of nice trimmings. The screen is a 10.4" TFT, the floppy swaps out for a 4x CD-ROM drive, it has 16-bit sound and an IR port. The notebook posted scores above average

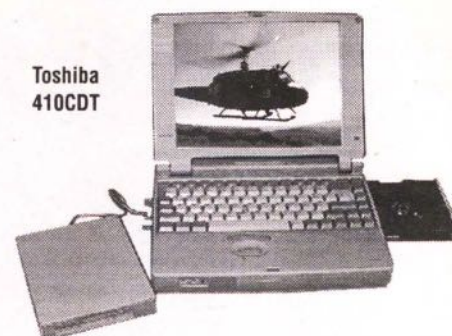
for a machine of its class and is comfortable to use. The palm rest is larger than those found on most machines and is cupped in around the touchpad to provide more ergonomic support. This unit has a suggested retail price of \$4,300. The dual-scan version, with fewer features, sells for \$3,100.

## Toshiba 410CDT and Tecra 700CT

Toshiba has built a reputation for innovative and solid notebooks, and its line is a force to be reckoned with. Its sales volume is among the highest in the country.

Toshiba is one of only a handful of vendors that are remaining true to the eraser-head type pointing device, and most of their products still incorporate this technology. The Toshiba 410 is the lower-end model of the two we

Toshiba  
410CDT



reviewed, but it is certainly not a lower-end machine. The 410 came with a Pentium 90 MHz processor, an 11.3" TFT display with 800x600 resolution, a 1.6 GB hard drive and 16 MB of EDO RAM. As one has come to expect from Toshiba, the notebook has all the

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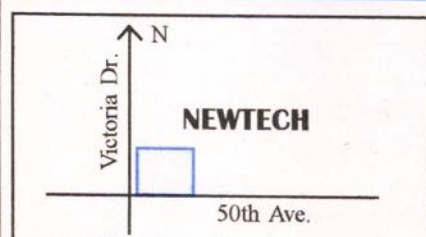
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### PCI / VESA Bare Systems

|  |        |
|--|--------|
| <input type="checkbox"/> 80586 Pentium 166MHz    | \$1043 |
| <input type="checkbox"/> 80586 Pentium 150MHz    | \$862  |
| <input type="checkbox"/> 80586 Pentium 133MHz    | \$707  |
| <input type="checkbox"/> 80586 Pentium 120MHz    | \$587  |
| <input type="checkbox"/> 80586 Pentium 100MHz    | \$528  |
| <input type="checkbox"/> 80586 Pentium 75MHz     | \$474  |
| <input type="checkbox"/> 80486 AMD DX4 /120MHz   | \$412  |
| <input type="checkbox"/> 80486 Intel DX4 /100MHz | \$467  |

### All Models Includes:

(assembly included)

Cache: 256K 20ns

Memory: 4MB

Case: Mini Tower (200W)

I/O Card: 2s/1p/1g

(Pentium w/16550)

Keyboard: WIN95 Keyboard

Floppy Drive: 1.44MB

### Upgrades:

|  |       |
|--|-------|
| <input type="checkbox"/> To 512K Cache (Pentium only)    | \$60  |
| <input type="checkbox"/> To 8MB(586: 2x4MB)              | \$62  |
| <input type="checkbox"/> 16MB(486: 1x16MB)               | \$142 |
| <input type="checkbox"/> 16MB(586: 2x8MB)                | \$138 |
| <input type="checkbox"/> To Mid-Tower 15"                | \$5   |
| <input type="checkbox"/> Mid-Tower 19"                   | \$20  |
| <input type="checkbox"/> Full Tower 25"                  | \$45  |
| <input type="checkbox"/> To 256K Pipeline Cache(Pentium) | \$12  |

### CPUs

|  |        |
|--|--------|
| <input type="checkbox"/> 486 DX2-66 MHz Intel (overdrive)  | \$Call |
| <input type="checkbox"/> 486 DX4-100 MHz AMD               | \$Call |
| <input type="checkbox"/> 486 DX4-100 MHz Intel             | \$Call |
| <input type="checkbox"/> 486 DX4-100 MHz Intel (overdrive) | \$Call |
| <input type="checkbox"/> Pentium 75MHz                     | \$Call |
| <input type="checkbox"/> Pentium 100MHz                    | \$Call |
| <input type="checkbox"/> Pentium 120MHz                    | \$Call |
| <input type="checkbox"/> Pentium 133MHz                    | \$Call |
| <input type="checkbox"/> Pentium 150MHz                    | \$Call |
| <input type="checkbox"/> Pentium 166MHz                    | \$Call |
| <input type="checkbox"/> Pentium Pro                       | \$Call |
| <input type="checkbox"/> Cyrix 5x86-100/120/133            | \$Call |
| <input type="checkbox"/> Cyrix 6x86-100/120/133            | \$Call |

### Memories

|   |        |
|---|--------|
| <input type="checkbox"/> 1MB SIMM 30pin     | \$Call |
| <input type="checkbox"/> 4MB SIMM 30pin     | \$Call |
| <input type="checkbox"/> 4MB SIMM 72pin     | \$Call |
| <input type="checkbox"/> 8MB SIMM 72pin     | \$Call |
| <input type="checkbox"/> 16MB SIMM 72pin    | \$Call |
| <input type="checkbox"/> 4MB EDO RAM 72pin  | \$Call |
| <input type="checkbox"/> 8MB EDO RAM 72pin  | \$Call |
| <input type="checkbox"/> 16MB EDO RAM 72pin | \$Call |

### MotherBoards(no CPUs)

|   |       |
|---|-------|
| <input type="checkbox"/> 486DX/DX4, 256K,PCI,72p    | \$142 |
| <input type="checkbox"/> 486DX/DX4, 256K,VLB,30/72p | \$133 |
| <input type="checkbox"/> 586 GIGA 256K              | \$170 |

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Address: \_\_\_\_\_

City: \_\_\_\_\_ Prov.: \_\_\_\_\_ Postal Code: \_\_\_\_\_

Home Tel: \_\_\_\_\_ Office Tel: \_\_\_\_\_

Fax: \_\_\_\_\_

|  |        |
|--|--------|
| <input type="checkbox"/> 586 GIGA w/ 256K Pipeline Cache | \$192  |
| <input type="checkbox"/> 686 Pentium Pro mainboard       | \$Call |

### Video Cards

|   |        |
|---|--------|
| <input type="checkbox"/> ATI Graphics Xpression PCI, 1M | \$129  |
| <input type="checkbox"/> ATI Graphics Xpression PCI, 2M | \$147  |
| <input type="checkbox"/> Cirrus Logic 5429 VLB          | \$63   |
| <input type="checkbox"/> Cirrus Logic 5436 PCI          | \$73   |
| <input type="checkbox"/> Diamond Stealth PCI 2MB        | \$166  |
| <input type="checkbox"/> Diamond Stealth V2001          | \$201  |
| <input type="checkbox"/> Trident 8900CL SVGA 1MB        | \$65   |
| <input type="checkbox"/> Trident 9440 PCI               | \$56   |
| <input type="checkbox"/> Matrox Mellinim 2MB WRAM       | \$Call |
| <input type="checkbox"/> Matrox Mellinim 4MB WRAM       | \$Call |

### CD ROMs

|  |       |
|--|-------|
| <input type="checkbox"/> Toshiba 8x Speed      | \$185 |
| <input type="checkbox"/> Toshiba 6x Speed      | \$117 |
| <input type="checkbox"/> Toshiba Quad Speed    | \$87  |
| <input type="checkbox"/> Mitsumi Quad Speed    | \$70  |
| <input type="checkbox"/> Panasonic Quad Speed  | \$78  |
| <input type="checkbox"/> Creative Lab 6x Speed | \$109 |
| <input type="checkbox"/> Acer 6x Speed         | \$108 |

### Hard Drives

|   |       |
|---|-------|
| <input type="checkbox"/> Fujitsu 1.08GB | \$268 |
| <input type="checkbox"/> Quantum 850MB  | \$255 |
| <input type="checkbox"/> 1.2GB          | \$315 |
| <input type="checkbox"/> W.D. 850MB     | \$264 |
| <input type="checkbox"/> 1.08GB         | \$282 |
| <input type="checkbox"/> 1.2GB          | \$290 |
| <input type="checkbox"/> 1.6GB          | \$339 |
| <input type="checkbox"/> 2.1GB          | \$456 |
| <input type="checkbox"/> 2.5GB          | \$560 |

|  |      |
|--|------|
| <input type="checkbox"/> Fujitsu 1.44MB      | \$33 |
| <input type="checkbox"/> Fujitsu/Epson 1.2MB | \$60 |

### Tape Backups

|  |       |
|--|-------|
| <input type="checkbox"/> Colorado Jumbo 350MB Internal | \$123 |
| <input type="checkbox"/> Colorado Jumbo 350MB External | \$305 |
| <input type="checkbox"/> Colorado T1000 810MB Internal | \$224 |

### Keyboards

|   |      |
|---|------|
| <input type="checkbox"/> ACK-200          | \$20 |
| <input type="checkbox"/> Fujitsu 4720     | \$56 |
| <input type="checkbox"/> Fujitsu 4872     | \$30 |
| <input type="checkbox"/> Natural keyboard | \$76 |
| <input type="checkbox"/> Win 95 keyboard  | \$22 |

### Fax / Modems

|  |       |
|--|-------|
| <input type="checkbox"/> Supra Express 28.8 int              | \$171 |
| <input type="checkbox"/> US Robotics 28.8 /V.34 Int.         | \$227 |
| <input type="checkbox"/> US Robotics 28.8 /V.34 Ext.         | \$251 |
| <input type="checkbox"/> US Robotics 28.8 /V.34 Int. w/voice | \$239 |
| <input type="checkbox"/> Cardinal 14.4 int                   | \$79  |
| <input type="checkbox"/> Cardinal 28.8 /V.34 Int.            | \$177 |
| <input type="checkbox"/> Cardinal 28.8 /V.34 Ext.            | \$222 |
| <input type="checkbox"/> Cardinal 28.8 /V.34 Ext.with Voice  | \$263 |
| <input type="checkbox"/> Motorola 28.8 Ext.                  | \$205 |

### Cases(with LED & Power supply)

|   |       |
|---|-------|
| <input type="checkbox"/> Desktop        | \$68  |
| <input type="checkbox"/> Full Tower 25" | \$101 |
| <input type="checkbox"/> Mid-Tower 19"  | \$75  |
| <input type="checkbox"/> Mid-Tower 15"  | \$61  |
| <input type="checkbox"/> Mid-Tower 13"  | \$53  |

### Mice

|   |      |
|---|------|
| <input type="checkbox"/> Logitech Mouseman Serial | \$62 |
| <input type="checkbox"/> Logitech Serial (OEM)    | \$32 |
| <input type="checkbox"/> MS 2 button J-Mouse      | \$32 |
| <input type="checkbox"/> Super Mouse              | \$9  |

### Monitors

|  |        |
|--|--------|
| <input type="checkbox"/> Magnavox 17"                | \$825  |
| <input type="checkbox"/> ADI 4V 15" Microscan        | \$525  |
| <input type="checkbox"/> Daytek 14" Non-int/Low Rad. | \$315  |
| <input type="checkbox"/> Daytek 15" Non-int/Low Rad. | \$416  |
| <input type="checkbox"/> Daytek 17" Non-int/Low Rad. | \$782  |
| <input type="checkbox"/> Provieu 14"                 | \$295  |
| <input type="checkbox"/> Sony / NEC Model:           | \$Call |

### Printers

|  |        |
|--|--------|
| <input type="checkbox"/> Canon BJC-210 Bubble Jet    | \$277  |
| <input type="checkbox"/> HP 660C Inkjet              | \$493  |
| <input type="checkbox"/> Epson stylus color 2        | \$414  |
| <input type="checkbox"/> HP Laserjet                 | \$Call |
| <input type="checkbox"/> Brother Laser HL-641        | \$510  |
| <input type="checkbox"/> Brother Laser HL-660 600dpi | \$690  |
| <input type="checkbox"/> OKIDATA OL600E 600dpi       | \$549  |
| <input type="checkbox"/> OKIDATA OL610E 600dpi       | \$692  |

### I/O Controller Cards

|   |       |
|---|-------|
| <input type="checkbox"/> Adaptec SCSI ISA 1505A | \$65  |
| <input type="checkbox"/> Adaptec SCSI ISA 1522A | \$86  |
| <input type="checkbox"/> Adaptec SCSI PCI 2940  | \$255 |
| <input type="checkbox"/> Adaptec SCSI PCI 3940  | \$420 |

### Sound Cards

|   |       |
|---|-------|
| <input type="checkbox"/> SoundBlaster 16        | \$104 |
| <input type="checkbox"/> SoundBlaster 32 Retail | \$219 |
| <input type="checkbox"/> SoundBlaster 32 AWE    | \$305 |

### Network

|   |      |
|---|------|
| <input type="checkbox"/> 16bit NE2000 compatible card | \$35 |
| <input type="checkbox"/> GVC 16-bit combo             | \$63 |
| <input type="checkbox"/> 3-Com 16-bit combo           | \$73 |

### Others

|  |       |
|--|-------|
| <input type="checkbox"/> Windows 95 OEM (Full) with system | \$124 |
|--|-------|

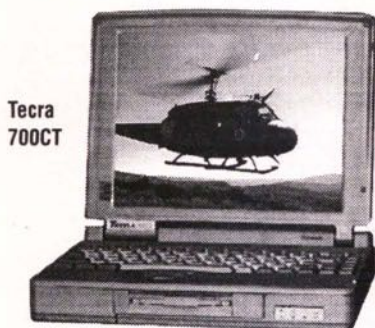
SubTotal: \_\_\_\_\_

Discount: \_\_\_\_\_

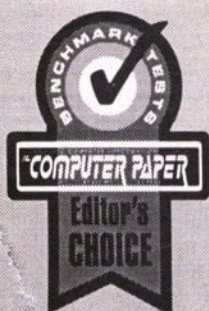
Total: \_\_\_\_\_



trimmings: 4x CD-ROM drive, lithium-ion batteries, 16-bit sound, and an IR port. The machine managed to perform at the top of its class.



The Tecra 700CT is a different bird. The unit is slightly bigger, packs a Pentium 120 MHz processor, uses the same 11.3" TFT screen, comes standard with 16 MB RAM, a 1.1 GB drive and lithium-ion batteries. On the downside, the Tecra's floppy is quite a bulky external drive. The system is a joy to use and performance is very good, but as it is the most expensive unit reviewed, we would expect no less.



**AST Ascentia P30**  
**Dell Latitude LM**  
**Panasonic MK III**

#### Performance: Dell Latitude LM

There was no debate as to who should receive Editor's Choice in this area. The Dell Latitude LM was so fast that we were all reaching for our chequebooks.

#### Value: Dell Latitude LM

Not only is this machine fast, it is also complete, coming with a 4x built-in CD-ROM drive and audio system. Performance in a notebook often sends the price point to the wind, however, this is not so much the case with the Latitude LM which manages show-stopping speeds at a price that doesn't exclude potential buyers from a seat.

#### All Round: Dell Latitude LM, Panasonic MK III, AST Ascentia P30

We'll have to split in this category. The Dell is a fine performer and is also solid in the areas of features and price—a great all-rounder. However, we do also like the Panasonic. Although bigger and heavier than its brethren, it packs a wonderful 12.1" screen, offers great performance and lots of features. Admittedly, this unit is not for everyone, but it is certainly our first choice for a notebook to use in place of a desktop.

The AST Ascentia P30 not only performed well in terms of benchmark scores, but is equipped with everything you could possibly want when you're on the go. With a really sharp TFT screen, a large hard drive and full multimedia capabilities, the system can handle even the most demanding of tasks—a stylish assistant, ready to work.

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| P-120  | \$1282 | P-120  | \$1753 | P-120   | \$1968 |
| P-133 Triton   | \$1403 | P-133 Triton   | \$1874 | P-133 Triton  | \$2089 |
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| P-166 Triton   | \$1742 | P-166 Triton   | \$2213 | P-166 Triton  | \$2428 |
| <ul style="list-style-type: none"><li>• 8MB EDO 60ns, 256K Burst Cache</li><li>• 1.08GB EIDE hard drive, Mode 4</li><li>• 3.5" 1.44MB floppy disk drive</li><li>• PCI EIDE, 2x16550UART, EPP</li><li>• Trident PCI 9680 graphics card 1MB DRAM, Full Screen MPEG</li><li>• 14" Monitor N.I.L.R., 1024x768, .28 dp</li><li>• 14" Mini-tower case 200W</li><li>• Logitech 2B Mini mouse</li><li>• 104 Windows 95 Keyboard</li><li>• 2 Year Parts and Labour Warranty</li></ul> |        | <ul style="list-style-type: none"><li>• 16MB EDO 60ns, 256K Burst Cache</li><li>• 1.3GB EIDE hard drive, Mode 4</li><li>• 3.5" 1.44MB floppy disk drive</li><li>• PCI EIDE, 2x16550UART, EPP</li><li>• ATI Mach64 Graphic Expression 1MB DRAM, exp. 2M Full Screen MPEG</li><li>• 15" Monitor N.I.L.R., Digital Control 1280x1024, .28 dp</li><li>• 19" Med-tower case 200W/230W</li><li>• Logitech 3B MouseMan (PS/2)</li><li>• 104 Windows 95 Keyboard</li><li>• 4X EIDE CD-ROM drive</li><li>• Soundblaster 16bit (Creative Lab)</li><li>• 60W Multimedia speakers</li><li>• 2 Year Parts and Labour Warranty</li></ul> |        | <ul style="list-style-type: none"><li>• 16MB EDO 60ns, 256K Burst Cache</li><li>• 1.6GB EIDE hard drive, Mode 4</li><li>• 3.5" 1.44MB floppy disk drive</li><li>• PCI EIDE, 2x16550UART, EPP</li><li>• Diamond 64 Video 3D 2MB EDO RAM, Full Screen MPEG</li><li>• 15" Monitor N.I.L.R., Digital Control 1280x1024, .28 dp</li><li>• 19" Med-tower case 200W/230W</li><li>• Microsoft V2.0 2B mouse</li><li>• 104 Windows 95 Keyboard</li><li>• 6X EIDE CD-ROM drive</li><li>• Soundblaster 16bit (Creative Lab)</li><li>• 60W Multimedia speakers</li><li>• 2 Year Parts and Labour Warranty</li></ul> |        |
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| Gigabyte 586ATS PCI w/ EIDE, high speed IO               | \$179      | LBP460 Laser 600dpi                        | \$485         | Jaz Drive 1.0GB SCSI Int.                         | \$658       |
| 256K Pipeline Burst Cache, Triton 430FX, Flash BIOS      |            | Stylus IIS / Stylus II                     | \$318/\$419   | Jaz Drive 1.0GB SCSI Ext.                         | \$789       |
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| 256K Pipeline Burst Cache, 430FX, Flash BIOS             |            | Photo PC Camera                            | \$639         | Ditto Easy 800MB Int. / Ext.                      | \$189/209   |
| ASUS P/I-P55T2P4 w/ EIDE, high speed IO                  | \$238      | DeskJet 680C / 820C                        | \$465/548     | Ditto Easy 3200 Ext. Para.                        | \$399       |
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| ASUS P/I-P55TVP4 w/ EIDE, high speed IO                  | Scall      | HP LaserJet 5P / 5MP 600dpi                | \$1199/1389   | TAPE 3M TR-1 400MB/800MB / TR-3 1600MB            | \$39/49     |
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| TYAN TOMCAT II Dual Pentium Socket 7                     | \$468      | HP ScanJet 4C w/ Photopaint                | \$1289        |   |             |
| 256K Pipeline Burst Cache, Triton-II, Flash, 8 RAM Slots |            |  |               |   |             |
| Intel Endeavor 3-in-1                                    | \$348      |  |               |   |             |
| 256K Pipeline Burst Cache, Triton, Flash, SB 16bit       |            |  |               |   |             |
| INTEL PENTIUM CPU  |            | MULTIMEDIA                                 |               | MODEM   |             |
| P75  | P100       | Altec Lansing ACS300 Speaker w/ Subwoofer  | \$313         | Cardinal 14.4 V.42 Fax/Data / Voice Int.          | \$75/88     |
| P138   | P199       | Yamaha M5 6W Spk. / M15 10W Speaker        | \$49/89       | Cardinal 28.8 V.34 Fax/Data Int./Ext.             | \$185/215   |
| P279   | P368       | Yamaha M10H Subwoofer 25W                  | \$149         | Cardinal 28.8 V.34 Fax/Data/Voice Int./Ext.       | \$223/248   |
| P499   | P699       | NEC Audio Tower Speaker System             | \$129         | SupraExpress 28.8 V.34 Voice/Fax Int. PNP         | \$172       |
|  |            | SoundBlaster 16 / PnP                      | \$98/118      | SupraFax 28.8 V.34 Fax/Caller ID/Flash Int./Ext.  | \$255/288   |
| AMD CPU  |            | CREATIVE SoundBlaster 32 PnP               | \$209         | 28.8 V.34 Int. WinModem                           | \$189       |
| 4X-100   | 4X-120     | SoundBlaster AWE32 PnP                     | \$309         | USR 28.8 VI V.34 Fax/Voice Int./Ext. (33.6K)      | \$348       |
| 5X-133   | 6X-100     | Pioneer 4X EIDE CD-ROM Drive               | \$65          | USR 28.8 VI V.34 Int. w/ Speaker Phone (33.6K)    | \$228/259   |
| 6X-120   | 6X-133     | Panasonic CR581 4X Int.EIDE / 6X 160ms     | \$75/118      |   | \$248       |
| \$68   | \$75       | 5302B 4x EIDE / XM5522B 6X                 | \$78/99       |   |             |
| \$79   | \$228      | TOSHIBA 5602B 8X EIDE CD-ROM               | \$168         |   |             |
| \$349  | \$610      |  |               |   |             |
| RAM (Call 451-8682 for latest price)                     |            | NETWORKS                                   |               | VIDEO CARD  |             |
| 4MB  | 4 EDO      | CNET 16BIT Combo (COAX & RJ-45)            | \$49          | Video Xpression 2MB EDO                           | \$189       |
| \$49   | \$59       | 3COM Etherlink 16 bit Coax /RG45 / 5 Pack  | \$130/122/635 | 3D Xpression 2MB EDO                              | \$218       |
| \$89   | \$95       | 3COM Etherlink 16bit 3C509B Combo / 5 Pack | \$155/699     | TV Tuner for Video / 3D Xpression                 | \$159       |
| \$183  | \$189      | 3COM Etherlink PCI 3C590 Combo 5 Pack      | \$220/955     | ATI Mach64 Winboost 1 exp. 2MB / 2MB DRAM         | \$135/159   |
|  |            | INTEL EtherExpress Pro/10+ Flash           | \$99          | ATI Mach64 Winburst 2 / 4MB VRAM                  | \$319/548   |
|  |            | APC UPS AP280VA / PRO                      | \$166/245     | ATI Graphic Pro Turbo 2 / 4MB VRAM                | \$375/569   |
| EIDE HARD DRIVES   |            | CONTROLLERS                                |               |   |             |
| WESTERN DIGITAL  |            | 16 bit Super I/O 2s. 1p.1g                 | \$22          | Stealth Video 2201 2MB                            | \$168       |
| Western Digital 639MB                                    | 11ms       | VLB 32bit EIDE with UART16550              | \$38          | Stealth Video 3D 2MB                              | \$199       |
| Western Digital 850MB                                    | 10ms       | VLB Promise 2300+ UART16550                | \$88          | Diamond STL64D Video 2121-1M / 2201-2M (EDO)      | \$168/218   |
| Western Digital 1.08GB                                   | 10ms       | SCSI ISA Adaptec 1522A / 1542F             | \$89/279      | Hardware MPAG / TV Tuner (for TV Series)          | \$175/175   |
| Western Digital 1.3 GB                                   | 10ms       | SCSI PCI Adaptec 2940 / 2940W              | \$260/318     | Diamond STL64 Video 3200 2MB VRAM                 | \$326       |
| Western Digital 1.6 GB                                   | 10ms       |  |               | Diamond STL64V Video 3240-1M / 3400-4M            | \$365/549   |
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| Maxtor 2.0 GB  | 12ms       |  |               |   |             |
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| Seagate 2.1 GB   | 10ms       | Fujitsu 4870 / 4725                        | \$48/59       | ADI 15" 4V / 17" 5V N.I.L.R.                      | \$520/868   |
| Seagate 4.26GB   | 10ms       | Focus 2001 / 7000 Trackball                | \$48/77       | Proview N.I.L.R. 28.14" / 15" Digital             | \$295/399   |
|  |            | Logitech 2B Mouse / MouseMan               | \$22/35       | Daytek 17" .28 N.I.L.R. 1280x1024 Digital Control | \$775       |
|  |            | Logitech Bus/TrackMan Combo Marble         | \$87/120      | DX15T 15" Trinitron .25MM                         | \$505       |
|  |            | 14"/19"/24" Mini tower case 200W           | \$65/88/125   | DX1795 17" .26MM                                  | \$918       |
|  |            |  |               | Princeton 17" Ultra + .28 1600x1280               | \$859       |
|  |            |  |               | 15" SX / SF-II Super Fine .25                     | \$578/655   |
|  |            |  |               | 17" SF II / 17" SE II .25                         | \$1195/1450 |
|  |            |  |               | NEC 15XV+ / 17XV+                                 | \$668/1128  |
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| SOFTWARE   |            | KEYBOARD, MICE & CASE                      |               | MONITOR   |             |
| CorelDraw for Windows 95                                 | \$249      |  |               |   |             |
| MS Access V7.0 for Windows 95 Full / Up                  | \$389/138  |  |               |   |             |
| MS NT Server 3.51 Full / Up                              | \$895/99   |  |               |   |             |
| MS NT Workstation 3.51 Full / Up                         | \$385/27   |  |               |   |             |
| MS Exchange Server / w 5 Clients for NT 3.51             | \$1238     |  |               |   |             |
| MS Office PRO for Windows 95 Full / up                   | \$739/499  |  |               |   |             |
| MS Plus 95 / Publisher 95                                | \$68/99    |  |               |   |             |
| MS SQL Server 6.0 for NT Full / Up                       | \$1218/599 |  |               |   |             |



# Taming the paper tiger

## Document management on the desktop

BY ROD LAMIRAND

**Document-management technology is not mature but because of improvements in OCR (optical character recognition) and OLE (object linking and embedding), there is a growing confidence that its time has come**

Here we are, after a decade of living on the eve of the paperless office, and most homes and businesses are awash in paper.

Filing cabinets around the world are bulging as never before and everybody is using more paper. We all have printers. Some of us have scanners. Most have a fax. Everybody uses a photocopier. It almost seems that the long-predicted paperless office is a fiction.

The real problem is not simply this paper chase, but the difficulties of trying to manage the voluminous and disparate information that falls upon us, soft and silent, like snow flakes in the night.

We work in a word processor on letters of love or complaint, on schedules or lists. We save E-mail for fear that we might later want to find something or someone. We download from the Internet knowing that there is useful, though not timely, information in our grasp.

And all the while the data builds until one day the baggage is too heavy, the suitcases too numerous. The labels that once seemed clever now turn cryptic. So, with a sigh of regret, the data is taken off the computer and stowed carefully away never to see the light of day again. In the strange world of computers this may all make some kind of sense, but looking at it

rationally—what a big mess! This is the very kind of thing that computers were to have saved us from.

That long ago promise of a paperless office has not yet been fulfilled but great strides are finally being made. This technology is not mature but because of improvements in OCR (optical character recognition) and OLE (object linking and embedding), there is a growing confidence that its time has come.

Listed below are a few programs that found their way to the offices of *The Computer Paper*. They are not all of a kind, nor are they representative of the whole market. Rather, they are a sampling of some of the recent offerings to help you tame the paper tiger that leans so menacingly over your desk.

### PageKeeper Windows 2.0

From: Caere Corporation  
MSRP: US\$195.

PageKeeper for Windows 2.0 is a flexible information-management program that will scan, OCR, import, index, organize and/or search almost anything. This is a great product, which is not surprising because it is made by Caere, the makers of omniPage and WordScan (two OCR programs).



The software comes in two parts: the main program, PageKeeper, is the work horse; and PKDirect, is a utility that places a PageKeeper Search command in most applications when it is open. As well,

this small program, when running, will place a Send to PageKeeper command that will allow a user to send E-mail, text or a document to PageKeeper without leaving the current program. The install program asks if you would like to run PKDirect on startup which is a good choice for serious users.

As useful as this program is, it is PageKeeper itself that shines. The software can take a document from your scanner and save it as an image, or run it through the excellent OCR software and save it as text, or both! This is useful for poor-quality documents where the scan may incorrectly identify some words and a visual check of the image can correct the mistake.

Saving image-only documents with keywords or notes is straight-forward.

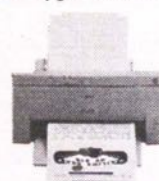
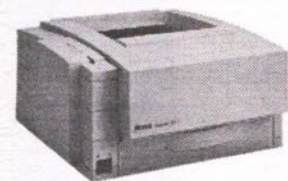
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### Odyssey A92

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Preloaded Software:

Win 95, MSworks 3.0, Photo Display, Quicken, Wall Street Money, Delrina Wincom, compuserve, IBM Voice Type Control, and many more.....



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|--------------------------------|--------|-----------------------|--------|
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| HP 5PCL 6                      | \$1775 | HP Office Jet         | \$795  |
| HP 5N Printer w/jetdirect card | \$2125 | HP 4V, 600dpi         | \$2693 |
| HP 5M Printer w/jetdirect card | \$2455 | HP 820C               | \$527  |
| HP 340 Portable                | \$399  | HP 850C               | \$679  |
| HP 4C Scanner                  | \$1275 | HP 600 Inkjet         | \$299  |

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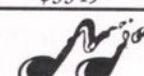
### JULY SPECIAL

| NEC Versa 2200C | Toshiba 100CS | Texas Inst. 560CDT | AST J-10 | Epson 660C | IBM 365ED Thinkpad |
|-----------------|---------------|--------------------|----------|------------|--------------------|
| \$3298          | \$2525        | \$4759             | \$3338   | \$2159     | \$3345             |



Jascom's System: P100, P133, P150, P166, \$2099, \$2298, \$2460, \$2666

Includes: 16MB RAM EDO, 1.44MB Floppy Drive, 1Gig hard drive, Mini tower, 1MB Video card, keyboard, 4x Creative Lab CD ROM, logitech mouse 15", Mon. windows 95



| Motherboards                     | Video Cards                        | Miscellaneous      |
|----------------------------------|------------------------------------|--------------------|
| 486DX4-100, VLB \$199            | CL5440 1MB/2MB \$73/95             | 3.5" floppy \$35   |
| P-75, Asus M/B. CPU & Fan \$359  | TR9440 1MB/2MB \$76/99             | Heat sink fan \$12 |
| P-100, Asus M/B. CPU & Fan \$437 | ATI PCI Mach 64 2/4 VRAM \$340/535 | Mini Tower \$54    |
| P-120, Asus M/B. CPU & Fan \$520 | Matrox Millennium 2MB \$350        | Keyboard \$25      |
| P-133, Asus M/B. CPU & Fan \$620 | ET 4000 1MB DRAM \$95              | Powerbar \$8       |
| P-150, Asus M/B. CPU & Fan \$965 | CL 5446, 64 bit 1MB/2MB \$82/106   | Memory \$Call      |

| Monitors                             | Hard Drives                     |
|--------------------------------------|---------------------------------|
| Dacwo 14/15/17" \$324/455/848        | NEC 1.08/2.1GB \$255/385        |
| Mag 15/17Preston 17" T \$558/845/985 | WD 1.1/1.3/1.6GB \$275/285/335  |
| NEC C500/M5-500 \$535/735            | Quantum 2GB SCSI SAT. \$688     |
| NEC XV 15+/17+ \$670/1125            | Quantum 2GB SCSI Atlas \$920    |
| Sony 15SE/17SE/17SE \$679/1250/1490  | Quantum Fireball IDE1.2 \$315   |
| Hi-com 14/15/17" \$320/456/825       | Quantum 850GB trail \$239       |
| Sceptra 14/15/17" .26 \$315/469/915  | Seagate SCSI 2.1GB \$998        |
| Viewsonic 15ES/17EA \$475/935        | Seagate 1.08/1.26 IDE \$262/288 |

| Canon Printer       | CDROM & Sound Card                                | Accessories                              |
|---------------------|---|--|
| Canon BJ230 \$478   | Creative Lab CD Value 4X/Discovery \$320/418      | USR 28.8/28.8/Int. modem \$225/250       |
| Canon BJC4100 \$375 | Creative Lab 8x Edutainment Performance \$459/535 | USR 28.8 PCMCIA \$340                    |
| Canon BJC210 \$255  | 4X/6X CD ROM/Soundblaster oem \$69/125/109        | MS Mouse ver 2.0 \$35                    |
| Canon LBP460 \$475  | Panasonic Power Drive Rewritable 4X \$635/675     | Windows 95 (full version) \$145 w/system |
| Canon BJ30 \$285    | OEM/Ret \$1449                                    | Microsoft Keyboard OEM \$78              |
| Installation \$35   | HP CD 2X CD 2X writer/4X reader CD ROM \$1195     | Current CPU Prices \$Call                |
| *Data backup \$Call | Pinnacle Read/Write CD ROM \$Call                 | Internet Web Phones \$Call               |
| on CD*              | CD Titles/Softwares                               |  |



PageKeeper can import plain text, of course, but also dozens of different document types. It had no problem with my Word for Windows documents even though some were Word 6 while others were RTF (rich text format). I did have problems with Word 7 documents but it is always a game of catch-up between new versions of different programs and I am confident that this will change directly.

But all this is routine, let me tell you where I was impressed. PageKeeper gives you the choice of importing text files into itself or leaving the files where they are and creating an external file index—cool. Both techniques can be useful but most programs don't allow either.

PageKeeper will also import certain E-mail message files, notably those that are VIM and/or MAPI compliant such as Microsoft Mail or cc:Mail. This proved a real bonus when I was able to take my E-mail and add it into the database I had built from files saved off the Internet. Oh, didn't I mention that it will download and manage some online files? PageKeeper will import files downloaded from WinCIM (that's CompuServe), Prodigy, AOL, and other major Internet service providers. This program will also import WinFax PRO files and turn the faxes into text documents.

There are other aspects to the program that make it very versatile such as the various search techniques, the easy-to-use drag and drop folder management and manual scan zones but that is a quick look at this program. I have only one small criticism. The search engine doesn't highlight the words it finds. This is a little annoying as the reader is obliged to scan the whole document to find the area of interest.

System requirements are one thing and the reality of what the program really needs is sometimes another. PageKeeper should have a 486 or better, 12 MB RAM and a large swap file.

## Big time document management

In anticipation of this article I met with a representative of a program called DOCS Open, created by a company called DOCS Open Inc. which is a subsidiary of PC Docs Group International Inc.

PC DOCS Open is a very high-end system which allows for the storage and management of documents. To PC DOCS Open, a document is any type of file that contains data. Their motto regarding data is "anything, anywhere, anytime."

This program is one that runs between applications and an operating system and transparently allows files from the data storage area to the user.

The program is amazing and can do almost anything, but it is a modular system with a very big price tag. The features that were demonstrated to me were far above anything most small businesses would need. Perhaps that is why the client list for this product includes the Pentagon, various governments and some multi-national corporations.

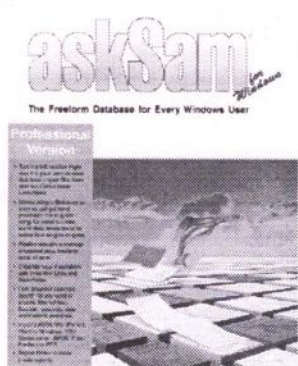
You can use it on a laptop, but unless the system is in use at your business, this would be overkill. With their expertise in managing databases as large as one million documents and their new expansion into Internet, secure-data routing and management, look to this company if you are planning secure document management on a grand scale. —RL

PageKeeper is one of the best programs looked at here, even with the rather cheesy icons.

Contact: Caere Corp., 100 Cooper Ct., Los Gatos, CA, 95030. Tel: 800-535-7226.

### askSam for Windows 3.0

From: askSam Systems  
MSRP: US\$149.95, (US\$395 for professional version with full-text indexing)



I look at between 40 and 50 software programs a year and it is rare indeed that I take on a new program for my real-world productivity. askSam is that rare program

and I am tickled pink by everything about it. Never have I seen so much value squeezed into so little space and offered at such a good price. askSam is a fast, free-form, flexible, information-management program. It doesn't do external file indexing or OCR scanning like the bigger and slicker PageKeeper, nor is it very good with image files, but it goes through text files like a seal through salmon—it's quick! The program takes various word processing files (.txt, .rtf, .wpd 5.1 thru 6.1, and .doc 6 to 7 to name some) and converts them to plain-text askSam documents.

Yes, you lose some of your formatting but in exchange you get small file size and great speed. You can also import your Eudora mail files. Thus I was able to automatically and without any trouble bring in my trash mailbox from the last year. At any time, I can do a name, word or number search of all my E-mail correspondence. This is very useful.

The program also allows you to save Web pages and then import them into your database. This is also extremely useful as you often find information and pages that you want to keep. Bookmarking them only gives you a pointer that you may never return to, while saving the page does not allow you to search more than one page at a time.

With askSam I save pages and sites willy-nilly, then every so often import them into my askSam Internet database and they are there. Even better, they maintain their hypertext markup language (HTML) look and feel, they are still hot linked if the link refers to the same page, and clicking on any other link will bring up the Web address and an option to Save to Clipboard. Of course, askSam is also a small but friendly Web page-creation program.

As wonderful as all this is for the home or small office user, the program is also a serious business application. askSam will create reports by searching for words, or numbers, or dates, or equations but even better, it is a great electronic-forms creation and management program.

Lastly, askSam has a number of useful and important functions such as: Date and Time Stamp, database file compression, auto field recognition, multiple enlarge button, telephone caller and more. This is not a big professional program for use with a scanner. This is a small, accurate, fast, useful program that will allow you to put all your data in one place, and actually be able to find and use the information without more work than it's worth, and to add new data from almost anywhere, anytime.

Contact: askSam Systems, PO Box 1428, Perry, Fla., 32347. Tel: 904-584-6590. E-mail: info@asksam.com



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## Recollect Gold



MindWorks

**Recollect Gold for Windows**

From: MindWorks Corp.

MSRP: \$799

Recollect Gold is a business application that is built for both text- and image-based documents. Recollect imports or scans

text or image files to store in an annotated and indexed database. The program has all the major features that you can find in PageKeeper: built in OCR, support for a large number of scanners, document highlighting and image manipulation.

Recollect has a number of import filters for popular word processors and these proved good. The import process has various options and creates a full text index for a number of search techniques.

The aspect of this program which stood out as better than the rest was its excellent

management of images. Recollect Gold is very good at dealing with scanned images. The user can add lengthy notation, highlighting, and arrows and even adjust the brightness. Depending on your scanner, the software can deal with a large number of different resolution scans—and color. Recollect performs speedy searches and nicely highlights the words that it finds. The scope of the many types of searches is flexible and over time a user could become quite proficient at finding just the right information in the database.

There is no doubt in my mind that this

program is a solid one that would be great for a number of businesses. There is a slew of small yet important features such as its ability to de-skew images, and create and import templates, export files and customizable views.

For all that, there is one aspect of the program I did not like—the interface. Recollect Gold uses the metaphor of folders and drawers—nothing wrong with that. And yet, time and again I would find myself having to refer to the well-written manual to figure something out.

Regardless, there is nothing wrong with the layout of this program, nothing that a few weeks practice wouldn't cure. And perhaps, when an employee had spent some time with it, there would prove to be reasons for certain procedures, steps, ways of getting

Continued on page 44

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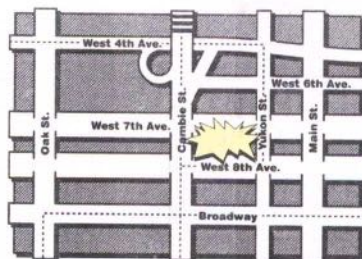
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## Vexing TWAIN and tedious TIFF

In the area of document management there are a number of things that are less than perfect. This is a developing area of the computer world and there is always some hitch or other. Here are a few of the things to look out for.

### Scanner

Make certain that your software specifically lists your scanner. This will allow you to avoid one of the most vexatious problems: incompatible software and hardware.

Programs will claim that they will accept most TWAIN-compliant devices but the TWAIN specification is very sloppily adhered to—more often than not the device and the program will not work properly together, if at all.

As for hand scanners, they're cute as bunny ears—and for document management, almost as useful! Get a real flatbed or sheet scanner. Or, for small-office, home-office use, one of the breed of new personal scanners.

### Software compatibility

Although most of these programs claim to import almost anything, this is only as true as saying that you can garden with a spoon—you can, but!

Unfortunately, it is often the case that you can't tell exactly which versions of which programs a product will import without opening the box. Cutting the shrink wrap off big expensive computer programs is a bit of a faux pas at my local store, so here is what you can do—visit the company's Web site. Practically every software company out there now has a site—often with patches.

For this review, I twice downloaded patches which allowed me to import updated versions of software that had come out in the last year.

Failing this, use the telephone and call the company. Asking a retail salesman is a good way to have a basketful of problems if you later try to return the opened software. What you need to ask is "Does this program support version X of my word processor/graphic program?" Because if you have Microsoft Word 6.0 and the program only imports up to 5.1 you are stuck.

Worse, there are a number of flavors of TIFF files. I would guesstimate that almost half the time I try to open a TIFF file from a different program than I created it in, it doesn't work. —RL



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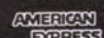
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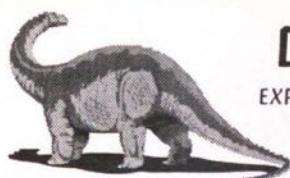
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## DOCUMENT MANAGEMENT

### Taming the paper tiger

Continued from page 42

from one thing to another. This doesn't change the fact that the program takes some getting used to.

Recollect Gold is a solid business application which handles text and images with equal ease. Good scanner support and software-import capabilities are only slightly offset by an interface that seems a little clumsy.

Recollect Gold only needs a 386-33 and 4 MB RAM to run but prefers a 486-33 or better with 8 MB. Like the others, this program was not specifically written for Win 95 but works well on it.

Contact: Canadian distributor: Quest Imaging,  
Tel: 604-685-7003.  
MindWorks Corp., Tel: 1-408-730-2100.

### EZ Recall

From: EZ Image Inc.  
MSRP: single user, US\$1,495 (multi-user licences available)

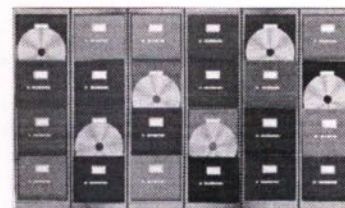
EZ Recall is a business program that bills itself as "the complete business records centre solution." That is because this is a hardware/software full-service solution for a small- to medium-sized, company.

I got hold of the software and looked it over. It seems decent enough; however, the value in this type of system is in the day-to-day tracking of large numbers of documents. This company will come into your business and set up only the parts of its system that you need. OCR? Capture of faxes or forms? Storage on CD-ROM, hard drive, optical disk or even

COM (computer output to microfiche)? They can allow access to your local area network (LAN) or wide-area network (WAN).

There are great search capabilities and indexing as well as document duplication, copying of data, pasting, notation, date and time stamping. The software can combine OCR and bar coding with template and zone recognition to build custom systems to track almost anything from 18 wheelers to newspaper articles.

EZ Image Inc.



**EZ Recall**  
FOR WINDOWS

The interface itself is simple and Spartan; the functions practical and expected; and the system logical.

If you run a business in which full filing cabinets are being carted up to the back room, requiring a team to be sent in to the room every couple of months to track something down, then this is the program for you.

EZ Image is a smaller company out of Washington State that has some stiff competition but which has a good product and knows its clientele. □

Contact: EZ Image Inc., PO Box 73284, Puyallup, Wash., 98373. Tel: 800-677-8533.

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January 9, 1996  
Millennia

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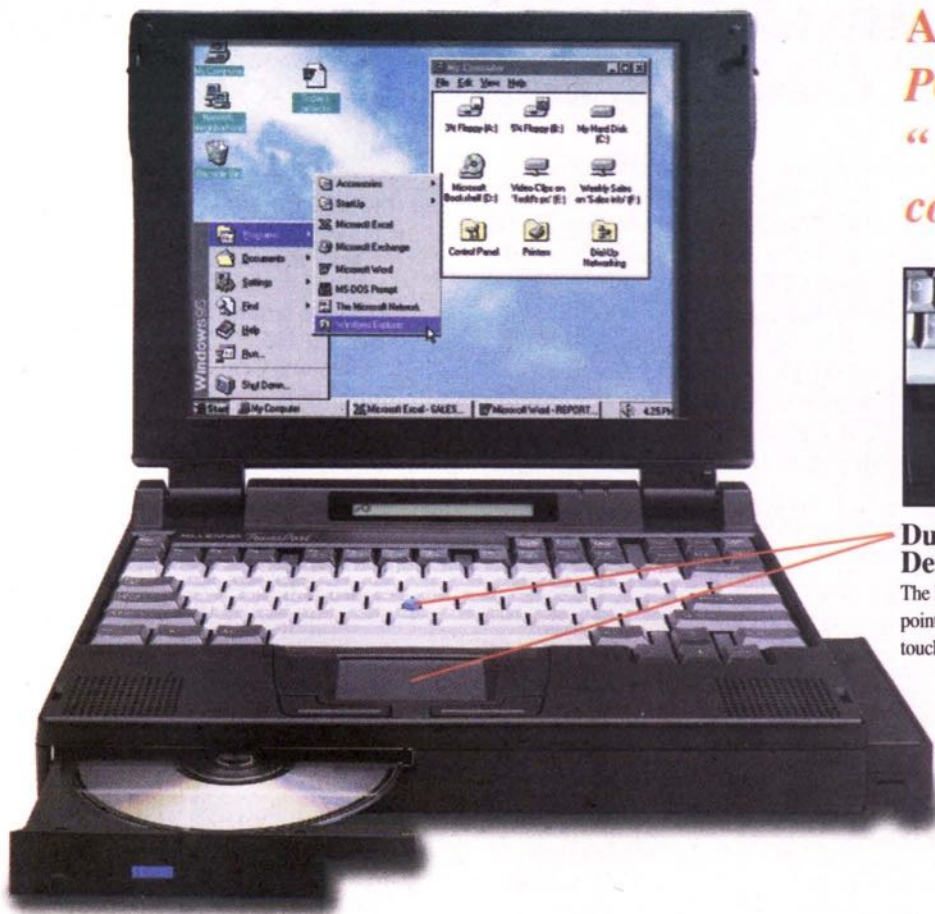
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According to the April 9, 1996, issue of *PC Magazine*, the Millennium Transport "... set a new standard for notebook computing with top scores. ..."



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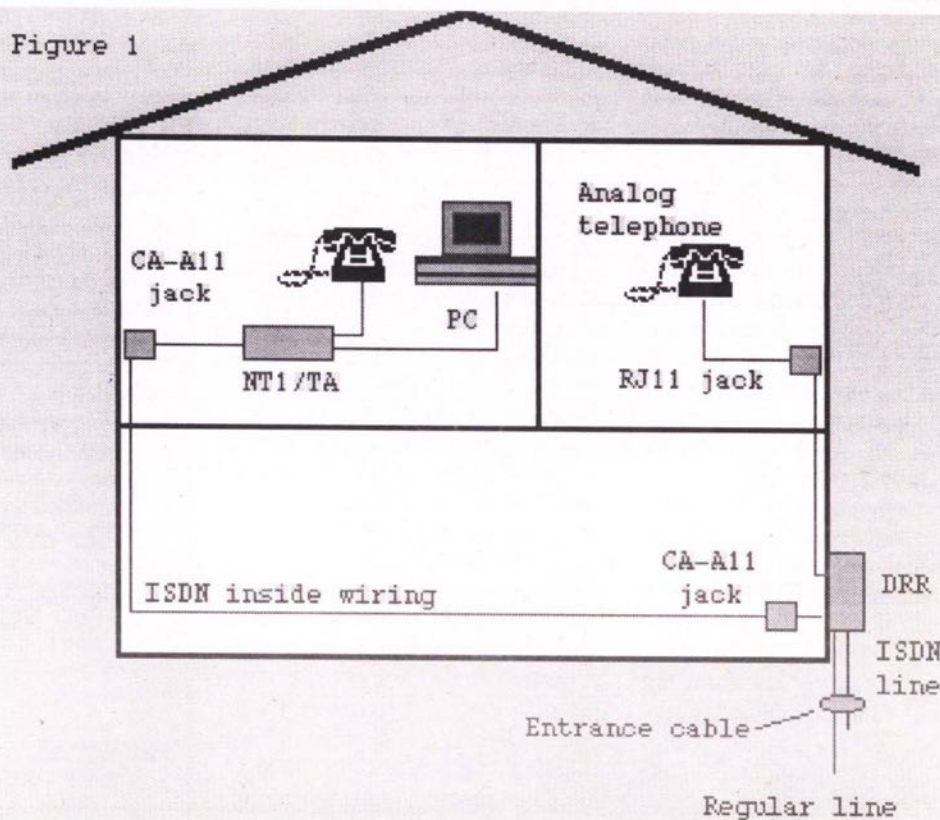
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# ISDN comes home

BY CHRIS FISHER

Figure 1



I phoned to inquire about getting a line, I was pleasantly surprised to find out that the service was already available where I live.

The business of physically installing a line is straightforward. Many homes already have two pairs of copper wire coming into them. One pair is undoubtedly used for your POTS (plain old telephone service), the other pair is usually spare unless you have two lines in your home.

ISDN only requires one pair of copper wires, so if all is well, the service can be added without laying down any extra wire. In other words, you can usually have an ISDN line and a POTS line with the existing wiring to your home.

## What's the catch?

There are catches to ISDN home service which come in the form of technical or service limitations and hidden costs. On top of the flat monthly fee, there is a usage fee for outgoing calls. This amounts to \$1 an hour from 7 a.m. to 7 p.m., Monday to Friday. For those who work outside the home, this isn't really much of an issue, as you are most likely not using the phone during these hours. Moreover, there is a cap of \$50 on the usage fee, so even if you did decide to get one for home-business purposes, or found yourself at home for an extended period, the bill will not run too far away from you.

Currently there are no smart-touch services such as caller ID, call answer, etc., so if you plan to use ISDN as a primary telephone service, you'd better be able to live without these. ISDN does support these types of features, and Bell informs me that they are looking at adding some of them to the service in the future.

Before Bell Canada started offering integrated service digital network (ISDN) service for the home in December, home users had to pay business rates (and if you live where Bell isn't the phone company, you still do).

Bell's home ISDN offering is currently known as Microlink and promoted as Z@P (pronounced ZAP), and will, by the time you read this, cost between \$50 and \$57 per month.

This charge gives you a basic rate interface (BRI) line, which consists of two B channels and one D channel. In simple English, this means you get two telephone lines, each with its own number and the ability to transfer voice and data at speeds up to 64Kbps.

Until July 2, Bell will waive the installation charge. While this promotion is good only if you live in Ontario or Quebec, you can bet that home ISDN itself is—or will be—offered in other parts of the country. You can check whether the service is available to you by going to <http://www.canisdn.net/> on the Internet and entering your area code and the first three digits of your phone number at "ISDN Availability."

## Ordering the goods

Ordering an ISDN line used to be quite a complex operation, requiring you to figure out the technical aspects of your setup. Now, getting a home ISDN line from Bell is a piece of cake. It's all a matter of phoning Bell and saying "Yeah, give me one of those ISDN lines at home and bill it with my regular service."

You can only get an ISDN line in your area if the switch has been set up to allow it. Bell has implemented ISDN capability in a surprisingly large residential area already. When

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The real pocket stinger lies in the fact that you need to purchase several pieces of equipment before you can do anything useful with an ISDN line. These are a terminating device (NT1), used to interface with the ISDN line and required to connect ISDN terminal equipment to the line, and a terminal adapter (TA), which enables connection of non-ISDN devices such as telephones to the line. One usually (but not always) finds these elements combined in a single unit which doubles as an ISDN modem. The Motorola BitSURFR is such a device.

Finally, ISDN lines do not provide power online. Thus, unlike a regular telephone line, if there is a power outage, telephone devices on an ISDN line will no longer work. Because of this, Bell recommends that you keep your analog line in addition to the ISDN line for emergencies.

You can get around this problem by installing a uninterruptible power supply (UPS) on the NT1/TA.

## The surfing experience

One of the nicest features of ISDN is the speed with which the call is dialed and connected. Rather than a 20-second wait using a 28.8 analog modem, the ISDN counterpart can make a connection in under a second. This has had a profound effect on how I use the Internet.

Using a 28.8Kbps modem, I would make mental notes on stuff I had to find out and wait until I had enough to make the chore of connecting worthwhile. Since I've had ISDN, the Internet has become more like another

application. I click, I connect, I seek, I consume, I disconnect. In essence, using ISDN has turned what used to be a batch process job into more of a transaction processing one.

ISDN is quick. Theoretically, using one B channel, the connection is a little over twice as fast as a 28.8Kbps modem connection. In practice, I find the connection offers somewhere close to double and sometimes triple the speed.

As many of you know from experience, a 28.8Kbps modem will rarely connect at its top speed, and even if it does, it will quite often drop back to lower speeds during the call due to line noise, etc.

An ISDN line has little to no interference. Connections are robust and always fast. Often, when communicating with the Internet, the bottleneck is not the connection speed, but the particular point on the Net that you're trying to get to. My browser stalls the same way it always has—"Waiting to connect." On the whole, however, I'm quite happy about the new lease that ISDN has given the Internet.

Anyone who has upgraded from a 14.4Kbps modem to a 28.8Kbps modem will have an idea of what twice the speed means: a lot less thumb twiddling. Even the most graphic-intensive of Web pages reach my screen before I've started to fidget. My desire for instant gratification is indulged.

This new-found speed has also made me more intrepid about trying out new things. I've watched videos over the Internet, listened to an hour-long Web Cast from

Apple's CEO, and tried a whole lot of plug-ins for the Navigator. Even though many of these features are designed to work with slower modem connections, personally, I have always passed them by because of the "time-to-load, cheesy-payoff" equation.

Multitasking is another area where I have seen a big improvement. It seems like nothing now to start a few instances of the browser and download several files at once. I even dare to open my PIM and start a word processor while the connection is in progress—stunts I wouldn't often attempt with a modem in use.

We've had an ISDN connection to the Internet at *The Computer Paper's* office for quite some time, which is routed and shared over our local area network (LAN). I have seen more than a few other offices where this is also the case, however, a home connection somehow seems nicer. The bandwidth is mine and mine alone.

ISDN can also make telecommuting more viable—I use it to access both my machine at work and the company e-mail server. As I do this using TCP/IP over the Internet, no additional ISDN lines are needed at work. Certainly, an ISDN dial-up directly into the paper would provide a faster connection (as there is no Internet bottleneck to contend with) but, for grabbing a document or two, checking correspondence and making sure that the previous evening's backup was completed without error, this scheme works well.

## ISDN terms

Bell and others, like Motorola, seem to be working hard to take some of the more technical aspects out of ISDN.

As Mike Pun from Motorola put it, "At inception all technology is complex. A standard modem is a complex piece of equipment, but as the technology matures, the complexity is buried."

This is true. Not too long ago you may have needed to know what a command like

AT&F&C1&D2N3W1S7=90S10=60S95=47S7=60S11 did to get a modem to function. These days such instructions are sent behind the scenes, abstracted by a graphical user interface, and users are not overburdened.

ISDN is, in fact, old technology. However, it still hasn't seen enough widespread adoption to bring its associated lingo into common use.

Here is a peppering of terms to get started:

**B Channel (Bearer channel):** these are used to transmit voice and data. A "B channel" runs at speeds up to 64Kbps.

**BONDING:** An acronym for the protocol standard from the Bandwidth On Demand Interoperability Group,

this allows B channels to "bond" or be used simultaneously for higher-data speeds.

**BRI (basic rate interface):** The most common and least expensive ISDN service, it combines two 64Kbps B channels and a 16 Kbps D channel.

**D Channel (Delta Channel):** Used to support the overhead of ISDN, it carries call setup and signaling information.

**National ISDN:** This is a set of design specifications that facilitates compatibility between ISDN equipment.

**NT1 (network terminating device):** This device serves as the interface to an ISDN line, providing diagnostics and line testing.

**PRI (primary rate interface):** This consists of 23 64Kbps B channels and one D 64Kbps channel.

**SPID (service provider identifier):** This is the number provided by the ISDN service provider to identify the service and features of your line.

**TA (terminal adapter):** A device that enables non-ISDN equipment such as telephones and modems and fax machines to be used on an ISDN line.

—CF

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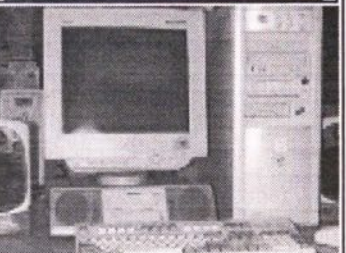
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**Q: When is a modem not a modem?**

**A: When it's an ISDN modem.**

Many devices used for communicating across ISDN telephone lines are generically termed ISDN modems, but this is a total misnomer.

The word modem, as many of you know, is a concatenation of modulator/demodulator, which is exactly what a modem does on an analog POTS line: it converts a digital signal to analog, and then back to digital. With an ISDN connection, modulation/demodulation doesn't occur, as the information can be passed in a digital fashion.

In fact you can't use a standard ISDN "modem" to send faxes or connect to other analog modems. However, some ISDN devices also come with analog data-communication capability.

**The internal-external debate**

Microsoft has stepped onto the ISDN band wagon in a big way and has entered into the business of recommending hardware. Its Web site recommends using an internal adapter over an external one. This is because most COM ports only support speeds up to 115.2Kbps. Microsoft's reasoning is that a call placed with two B channels has the potential to transfer data at 128Kbps, and thus an external model creates a small bottleneck at the computer. Internal models bypass this problem.

However, in my opinion, the convenience of an external model far outweighs any bottleneck problems. Having an internal model with an integrated NT1 means that if you turn your computer off you lose all ISDN phone service. If you want to use a power backup unit for an internal model, you will need one capable of powering your entire computer for some length of time, whereas an external model could run for hours on the

cheapest of UPSes.

Finally, if you will use your ISDN connection for Internet connectivity from home, it is unlikely under present conditions that you will sustain data throughputs at higher than 115.2Kbps long enough for any bottleneck to be realized.

**Internet service providers**

There is still the issue of finding a service provider that will allow you to use your ISDN line. These are still fairly few and far between. At the time of this writing, even Bell's Sympatico had not yet implemented ISDN dial-up. I phoned iSTAR and asked whether any service providers that fell under their umbrella offered this service. The answer was no.

It's funny how the information industry always seems to want to offer the solution you need months or years after you need it.

As a word of caution, if you are considering an ISDN line and will use it for Internet access, I suggest you survey the providers in your area. Several providers offering this service have decided to charge an arm and a leg—more than \$100 a month—for this kind of service.

Hopefully, as ISDN lines become more commonplace, the forces of competition will crush these rates. □

**Contacts:**

Web sites: There's lots of ISDN info on the Internet. A couple of good Canadian starting points are:

<http://www.bell.ca/bell/eng/products/res/isdn/default.htm>

<http://www.bell.ca/promo/zap>

<http://www.canisdn.net/>

<http://www.microsoft.com/windows/getisdn/>

<http://www.benjerry.com/>

Bell ISDN Service Center, Tel: 888-999-ISDN.

Web site: [www.bell.ca](http://www.bell.ca)

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# The Motorola BitSURFR Pro

BY CHRIS FISHER

When in the process of arranging ISDN service with Bell Canada, company reps spoke about Motorola's BitSURFR as if it were the only ISDN modem option available to put at my end of the line. It isn't, but I was curious enough about it that I got my hands on one for evaluation.

Mike Pun from Motorola dropped by, and gave us a truly informative session on the finer points of ISDN and the BitSURFR line.

The BitSURFR's default settings are for standards predominant in the United States. The only default setting that affects Canadians is the channel speed, which is set to 56Kbps out of the box and needs to be changed to 64Kbps, which is more common in Canada.

Before you can do anything with an ISDN modem terminal adapter (TA), you need to tell it several things about your ISDN line. This information includes your directory

numbers (your two ISDN phone numbers), and your service provider identifier (SPID).

Configuration Manager, the software used to set the BitSURFR up, is a little on the overwhelming side. Motorola does, however, have a more friendly setup program available on the Web, which will probably be shipped with newer BitSURFR packages.

Once you input the required parameters, these are downloaded to the BitSURFR. If everything is in order, the line sync-light on the BitSURFR goes from solid red to solid green and everything is ready to go.

I have to admit that this took me about three tries. The first effort was a failure because I used Motorola's new configuration program, not realizing that this didn't allow you to change the channel speed. I switched to the older Configuration Manager and tried again. Still it didn't work. In the end, I used the excellent diagnostic tool in the new setup program

to figure out that my SPIDs were wrong. I corrected them, sent the information to the BitSURFR and waited. A few seconds later the line-sync light went solid green.

I entered the appropriate ISDN telephone number for an internet service provider, hit connect, and moments later I was online. I was quite amazed at the simplicity of the setup and how quickly I got the BitSURFR Pro from out of the box to connection. I had prepared myself for hours of wrestling as is often the case when you're putting an unfamiliar piece of equipment to work. I'm happy to report that the BitSURFR barely put my skills to the test.

The BitSURFR Pro is quite complete in its feature set and will satisfy the needs of many individuals. The models in the BitSURFR line all have an integrated NT1. The Pro comes with two analog telephone jacks, one for each ISDN directory number.

It supports data transfer rates up to 128Kbps synchronous and 115.2Kbps asynchronous, V.120 rate adaption, single and multi-link PPP async-to-sync conversion, AIMux, synchronous BONDING (Bandwidth on Demand Interoperability Group) throughput, caller ID, call waiting and conference calling. You can program and communicate with the BitSURFR using the ISDN AT command set.

My hesitations in recommending the BitSURFR are few. It only has the ability to produce a single ring on each analog port, and as such, is not good enough to use for driving house wiring. The model I received came with no information on Canadian setup, though I understand that this will shortly change, and the external unit does not come with the necessary serial cable to hook it to the computer. □

Contact: Motorola, Tel: 888-4A-SURFR  
www.mot.com/mims/isg

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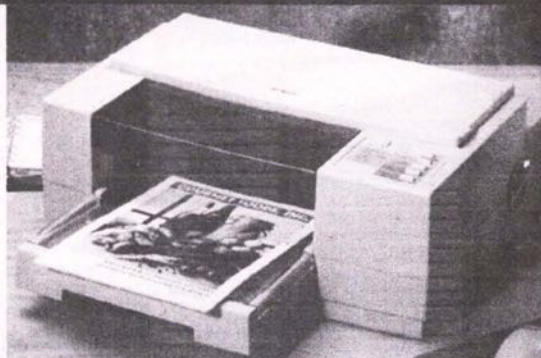
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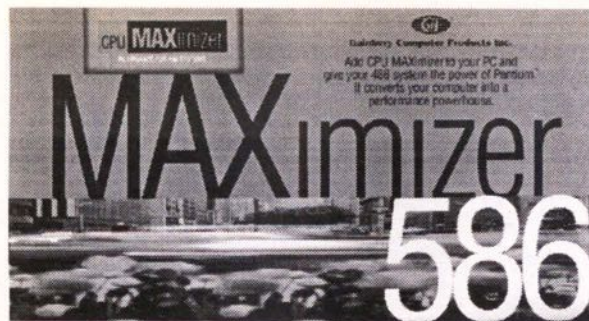
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Estimated Street Price: \$265

The first time I actually swooned was just after discovering what girls were about. Discovering this product was the second time.

Diligent readers will have noticed two articles in previous issues of *The Computer Paper* in which yours truly looked at upgrading first portables, then desktops. Despite several technical difficulties chip-wise, my experience with desktops was that upgrades were somewhat straightforward and relatively easy. Portables proved otherwise. There were so many "ifs" and "if you're lucky," that most laptop owners likely took the hint and left not-so-well enough alone.

But there I was, standing at my door, with an unexpected box in my hand from Gainbery Computer Products Inc. I'd heard of Gainbery before, largely because my upgrade articles had generated a lot of response and Gainbery noses, according to my e-mail, were slightly out of joint because I'd failed to mention them.

Gainbery, you see, is in the business of making central processing unit (CPU)

upgrades. Until recently, its catalog of products consisted of desktop CPU upgrades based on AMD chips. Now—and this is where the swoon finally comes in—they are producing an AMD 5x86 chip especially wired up to bring my aging DX/2 50 notebook into the Pentium-like world of the 5x86.

Really diligent readers will recall several references I've made over the years to my trusty NEC Versa E notebook which, a whole three years ago, was the superest kid on the block: DX/2 50 power, 4 MB RAM, a 210 MB hard drive and that oh-so-wonderful active color screen. Except for adding another 8 MB RAM, it all remains the same and I'm becoming less and less enchanted waiting for things to happen when I try to get my work done.

"Gee," I have often thought, "if only there was some way to upgrade the CPU," or words to that effect (this is a family publication after all).

Paradoxically, NEC did make an upgrade available for my Versa E at one time in the recent past, but it was only to a DX/4 75, it required factory installation and it cost—I'm not sure you're going to believe this—\$2,600!

I decided to skip it.

Now, for about one-tenth of that amount, Gainbery promises Pentium 133-like speed.

The product itself is a simple enough looking CPU with the standard 168-pin mount.

The instruction manual simply tells you to pull out the old chip and put in the new. All that jumper and BIOS stuff will only come into play on specific models and the chip is compatible with virtually any motherboard bus.

Trusting soul that I am, I nearly did the deed too. Within minutes I had my computer belly up on my desk and a screw driver firmly in hand.

Then it came to me—I'd only just paid a considerable sum for a two-year extension on my warranty. I decided I'd better call NEC first.

Of course, the first person I spoke with didn't know what the heck I was talking about when I asked if a self-inflicted CPU upgrade would void my warranty—though she was far more lucid about the chances of getting my money back if I decided to opt-out of the warranty for the sake of the upgrade. We left it that she'd get a technical type to call me back. I got my call back from NEC that very afternoon.

I had a problem: NEC used what's called a "four-corner carrier package" for mounting the CPU in my Versa. In simple terms, that means it's soldered to the motherboard, never to be excised. In even simpler terms, that means I did all that swooning for nothing.

Still, I wanted to know what was up so I called Gainbery and eventually talked with one of their technicians.

It turns out that the notebook upgrade chip is, in fact, an AMD 5x86 with a clock quadrupler built in. That's why it works with any motherboard bus. Regardless of your original bus speed, the Gainbery unit will work at four times the pace. Ergo, my DX/2 50 would not have blossomed into the P-133 equivalent I'd read about on the box. It would instead have become a more modest, but still quite fabulous, P-100 equivalent because my motherboard bus runs at 25 MHz.

But that's neither here nor there because it just ain't gonna happen for me. But it might happen for you.

Despite my own unfortunate chip-mounting circumstance, this will be the ideal product for hordes of notebook users reluctant to retire their multi-thousand-dollar dinosaur—maddeningly slow as it might now be.

The GB586NB-133 comes complete with a chip pulling tool (for LIF socketed CPUs) and even includes a US\$40 rebate voucher to cover the cost of installation if you're not quite up to the task yourself. All you have to supply is a notebook with a PGA CPU socket.

Consult your manual. □

Contact: Gainbery Computer Products Inc.,  
165 Steelcase Rd. E., Markham, Ont., L3R-1G1.  
Tel: 800-825-7331. Fax: 905-415-9970.

## Are you ready for Ready?

### A price cut for NEC's Ready multimedia computers

BY ROSS MACDONALD

Product: NEC Ready 7610 Multimedia Computer  
Estimated street price: \$2,499 (down from \$2,599)

As NEC's consumer line, the Ready series has been a very good seller over the past few years because many con-

sumers have learned, after some diligent shopping, that they could get premium-quality stuff for only slightly more money

(NEC recently announced that it has reduced prices on its Ready computers by \$78 to \$300, depending on which of the seven



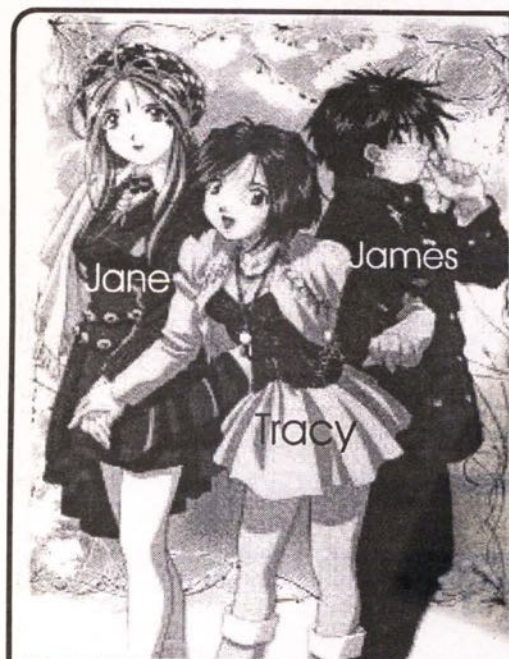
models you're after).

Having the Ready 7610 to play with, while testing out NEC's new monitor, gave

me an opportunity to see what you might get these days when you're ready for a Ready.

First, I should point out that the 7610 is the low-end of the Ready line. However, even at \$2,599, you get a Pentium 120 machine that comes standard with 8 MB EDO RAM, a 1.2 GB hard drive, 1 MB of video RAM, a 28.8Kbps data/fax/voice modem, a 4x CD-ROM drive, a microphone and SoundBlaster compatible 16-bit sound with a couple of really cheap five-watt speakers thrown in for good measure.

Continued on page 63



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# The COM port saga:

## FlexPort to the rescue

BY CHRIS FISHER

An ISDN modem needs a COM port to operate. As most ISDN modems cannot be used to send data calls to standard modems and fax machines, you may need to keep a modem in your system for these duties.

Installing three devices and allowing them to operate simultaneously using standard PC COM ports requires a bit of trickery. This is because COM 1 and 3, and

that allows you to set up four COM ports and two parallel ports. The value added part of this card is the ability it gives you to determine the interrupt and addressing that the COM ports use, effectively allowing you to have four COM ports working simultaneously.

My small problem was solved by disabling COM 3 on the motherboard and installing the FlexPort with COM 3 set to use interrupt 12.

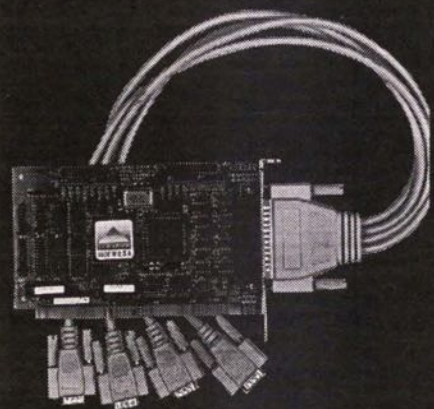
The FlexPort allows you to assign COM ports to a number of interrupts from 3 to 15 so chances are, even in a system overburdened with expansion cards such as mine, you will be able to find a way to get a communication port going.

I plugged the BitSURFR into the pertinent arm of the spider cable coming from the FlexPort, fired up the computer and away I went. Everything worked fine. No software drivers are required for the FlexPort running Windows 95. The system automatically saw that COM 3 was using interrupt 12 and quietly adjusted its settings. I now use both modems and my mouse simultaneously without any lock-ups.

The device has a suggested retail price of US\$139 and is distributed in Canada by White Knight Distributing. It does something that I like, exactly what it is supposed to—solves IRQ and address conflicts.

Note: Another way to potentially get around the problem of installing a third device on a COM port is to buy a bus mouse with a selectable interrupt setting. This can be used to free a COM port, so two modems can be comfortably assigned to COM 1 and 2. □

Contact: Quickpath, Tel: 800-995-8828  
www.quickpath.com



COM 2 and 4, share interrupts in the computer. In other words, if you are using a device on COM 1, you can't use a device on COM 3 at the same time.

On my machine, COM 1 is taken up by the mouse and COM 2 by my GVC 28.8Kbps modem. Aware of the problem with hooking up my new ISDN modem, but in a hurry to get going, I hooked the device into COM 3.

It worked long enough to get the line synched and make a connection, but then my computer froze. I was not shocked and did not panic. I had finally found a legitimate excuse to test Quickpath's FlexPort 42 card.

The FlexPort is an ISA expansion port



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# Traits of successful entrepreneurs



**ON YOUR OWN**  
by Douglas Gray

What kind of person becomes an entrepreneur? What characteristics must a successful entrepreneur have? Whether people are born with some of these traits or learn them is a topic for a good debate, but what we do know from numerous studies is

that successful entrepreneurs tend to have several important personality characteristics in common.

Entrepreneurs are often strong individualists, optimistic and resourceful, and they usually have a high degree of problem-solving ability. They also tend to be persistent self-confident, self-reliant, versatile, resourceful and have a strong desire to achieve. Additional traits include being objective, realistic, open to change, and looking for and creating opportunities.

Here are some other common traits of an entrepreneur:

### Strong goal orientation

Rather than being content with reaching goals, successful entrepreneurs continue setting new goals to challenge themselves. They set clear goals that are challenging but attainable, and continually re-evaluate and adjust goals to make sure they are consistent with their interests, talents and values as well as personal or business needs.

### Ability to withstand business reversals without quitting

Though perhaps disappointed, successful entrepreneurs are not discouraged by failure. They are able to use failures as learning experiences, so similar problems can be avoided in the future. They view setbacks as temporary barriers to their goals and have a strong capacity to build on successes.

### Willingness to accept calculated risks

Successful entrepreneurs have a preference for calculated risks, and the ability to identify risks and weigh their relative dangers to achieve goals that are high but realistic. This is contrary to the stereotype that entrepreneurs are gamblers or high-risk takers—the risks involved are often moderate due to the amount of planning behind them.

### Strong desire for independence

They have a genuine desire to be their own boss, free from external direction and control, with a sincere willingness and proven ability to be self-disciplined in sometimes isolated working conditions. They are able to organize activities to reach personal goals. Successful entrepreneurs are not usually joiners by nature. They often join only to network: to make business contacts, further their ventures, or obtain useful information to solve problems.

### Ability to handle uncertainty well

An entrepreneur must have an ability to live without the certainty of job security. He or she must face many crises, take risks, and allow for temporary failures without panic. Successful entrepreneurs accept uncertainty as an integral part of being in business.

### Ability to apply ideas creatively

Entrepreneurs have a strong desire to originate an idea or product, to develop something new, to be innovative, to make something happen, to imprint personality, dreams, and ideas on a concept in a unique and different way. They have powers of both observation and imagination to foresee possible market ideas.

### Sense of purpose

A feeling of mission must motivate the person to go into business; the activity must have meaning. The mission may be to make an attractive profit, to sell some necessary and unique product or service, or to develop ideas or skills without the constraints of others' expectations.

### Human relations ability

Successful entrepreneurs have the ability to understand and interact well with people of varying personalities and values. This is important when dealing with employees, bankers, investors, partners, suppliers, or customers and is reflected in characteristics such as sociability, consideration, cheerfulness, cooperation, and tact.

It is unrealistic to suggest that all successful entrepreneurs possess all the traits outlined. Many of the characteristics are interrelated and not all are necessary for business success, so do not be overly concerned if you feel you do not possess every one of these qualities. The key question is how significant the missing traits are to your type of business and your business goals.

You also have to fully identify and understand your personal strengths and weaknesses in the areas of management skills, product knowledge, and expertise. Once you have identified these areas, you are in a much better position to compensate for them by hiring employees, bringing in partners, or taking further training. □

Douglas Gray, LL.B., is a Vancouver-based speaker, lawyer, columnist and author of 15 business books plus a real estate investment software program. His books include *Home Inc.: The Canadian Home-Based Business Guide* and *The Complete Canadian Small Business Guide* (both by McGraw-Hill Ryerson), *Start and Run a Profitable Consulting Business* and *Marketing Your Product* (both by Self-Counsel Press).



# Apple licenses Mac OS to IBM

BY JEFF EVANS



**"With IBM's worldwide reach and our relationships with systems manufacturers, we're committed to proliferating the Mac OS and building upon the success of the PowerPC platform"**

— Michael J. Attardo, IBM's microelectronics division

Apple has announced it is licensing its Macintosh operating system to long-time rival (and more recently partner, as in the Power PC consortium) IBM.

The deal, unveiled in early May, is not the first Apple licensing agreement—one already exists with Motorola—but it is potentially the most significant.

"With IBM's worldwide reach and our relationships with systems manufacturers, we're committed to proliferating the Mac OS and building upon the success of the PowerPC platform," according to Michael J. Attardo, general manager of IBM's microelectronics division.

"Apple has been our valued partner in defining the PowerPC chip and PowerPC platform, and today we join forces to enable the industry for Mac OS," he added.

According to Apple, "IBM has long been a strategic Apple partner, and has the global, technical and marketing strength to propel the Macintosh platform to a new, expanded role. This much-anticipated agreement instantly opens up business opportunities for computer manufacturers worldwide."

Many Mac supporters will probably welcome the move to license the Mac OS more widely, even at this late date. ➤

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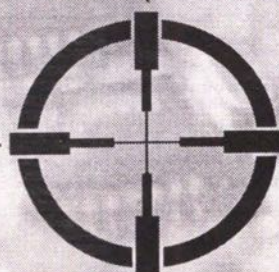
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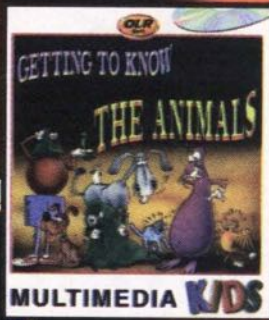




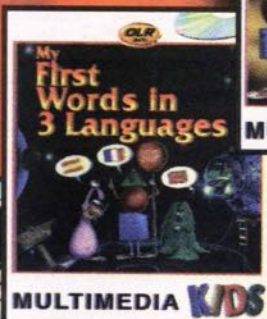
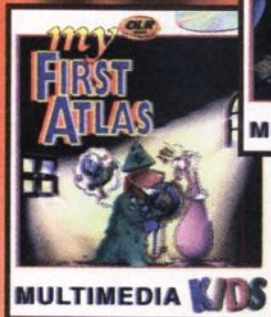
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One former Apple executive—now holding a senior position with a competing PC manufacturer—who talked with TCP recalled discussing the issue of licensing the Mac OS in 1988 with John Scully, then chief executive officer of Apple.

"I urged Scully to push for the licensing of the Mac OS to other manufacturers, and he claimed that he had strongly pleaded with the Apple board of directors to do it, but they had told him, absolutely no. 'You can't give away the religion,' they said," the former Apple executive said.

Over the past couple of years, Apple has allowed a few small manufacturers (including Power Computing, Radius and GoldStar) to make Mac-compatible PCs, but other would-be licensees have complained that the administrative process of getting approval from Apple was lengthy and convoluted.

According to published reports in the American media, the noted PC maker Gateway 2000 dutifully went through the process to become a licensed maker of Mac compatibles only to be put off in the end by Apple because of a shortage of PowerPC chips.

#### What Net surfers buy when they're not online

NB — A recent study by AC Nielsen Co. comparing the buying habits of cyberspace users to the average consumer found that while little difference existed in expenditures for consumer packaged goods, like groceries, buying patterns among certain categories of dry groceries was very different.

Among the data gathered by researchers, the study revealed that wired households on average spent 24 percent more than non-wired households on breakfast food and 13 percent more on soft drinks.

Gateway dropped its effort to become a Mac-compatible maker, and the incident put a chill on many other PC makers' interest in attaining a deal with Apple.

It remains to be seen if Apple can adapt to the fast-moving, rough and tumble mass market for PCs, and turn this promising connection to IBM into increased market share for the Mac OS worldwide.

Apple Canada remains a strong player at home, and Apple has had some notable success stories in key markets like Japan and the United States with its PowerBooks and PowerMac.

It still has an "Apple Advantage" in the ease of use of the Mac OS, and the quality and integration of its products, but it is facing dire competition from Microsoft and Intel.

If it wishes to reverse the decline in its share of the global PC market, Apple needs a faster, less perfectionist and less proprietary approach to its licensing efforts than it has displayed to date. □

Contact: Apple Canada, Tel: 905-477-5800.  
Web site: [www.apple.com](http://www.apple.com)

Researchers also found that, contrary to the stereotype, wired households were less "wired" than the average household: they spent 10 percent less on coffee than those who didn't participate in cyberspace.

The study identified wired consumers as primarily young males with a higher than average household incomes and education, and professional jobs.

Neilson mailed surveys to 40,000 US households and received 24,000 replies—a response rate of over 61 percent. Respondents were the primary computer users in each household. □

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# I love my UPS

## Power protection for your PC

BY CHRIS FISHER

I'm biased, I admit. I love my uninterruptible power supply (UPS), and I think everyone should have one.

I would even be happy to see them become integrated into the power-supply units of desktop computers. You could add a lot of value to a line of business-class PCs by installing an inexpensive UPS right in the case.

Having used a UPS on my home system for more than a year now, I can no longer imagine having the system without one.

The purchase of a home UPS is really a no-brainer. Units designed for personal computers can be had for about \$125, they last several years, and are almost guaranteed to pay for themselves during their operation.

### You love your first

I purchased my first UPS for home use when I moved out of the suburbs to a more isolated

area. Electricity was a constant problem in my old converted cottage. A UPS solved my sporadic power problems instantly.

The unit I purchased provided enough power to supply my monitor and computer

for five or six minutes, which is plenty of time to save work and shut down in an orderly fashion. Often, I would experience momentary blackouts or brownouts. The UPS corrected these problems on the fly and signaled me with a loud beep.

A month ago, I moved back into the

suburbs, to a regular house on a regular street in a regular town. I didn't expect to experience the same kind of payoff from my UPS as I had done living further afield. I was wrong. In the first two weeks, my UPS intercepted and protected my work from four short power interruptions, one of which resulted from my playing with the fuse box.

**It is not uncommon for a business to report revenue losses well in excess of \$50,000 for one hour of downtime. That money would buy a whole lot of UPSes**

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### Cry out loud!

The UPS feature I like the most is probably the loud audible wail many of them make when a power problem is detected and neutralized. This charming occurrence signals that, once again, your bacon has been saved.

I have experienced several power outages in the middle of the night, and the UPS was unfailing, even when the equipment connected to it wasn't turned on. It still let out a series of load beeps until power returned. I know when the noise of the UPS brings me from my silent slumber that every digital clock in the house is probably flashing and that the alarm clock needs to be reset. The

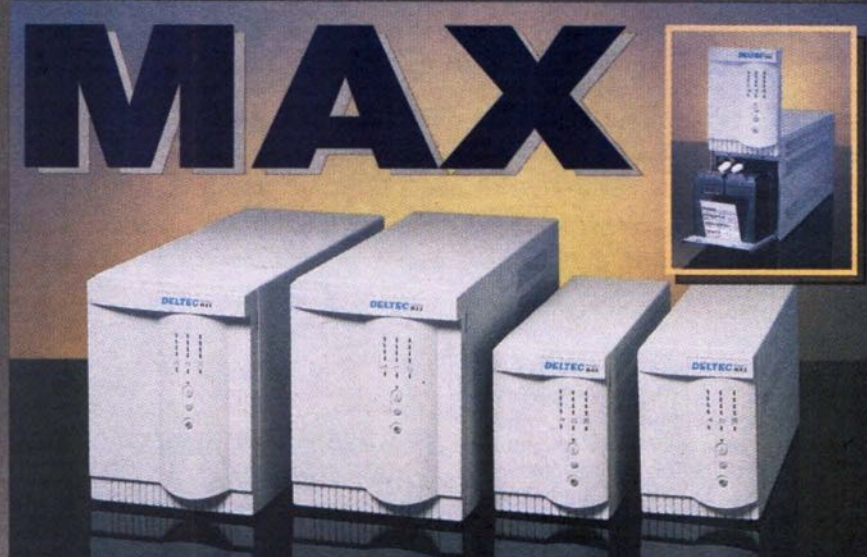
UPS's cry sparks a pleasant reaction in me: justification, money well spent.

UPSes are not only for computers. If you have a taste for the more esoteric home-entertainment systems, a UPS is a smart investment. If you've spent a few thousand dollars on stereo equipment, you may as well look after it by spending a couple of hundred on a UPS.

You never really know how much time and money a UPS may have saved you each time it kicks in. It is difficult to know what the consequences would have been if you were sans UPS—maybe you'd lose only the

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# I love my UPS

Continued from page 59

last two minutes of your work, maybe half an hour. Perhaps your computer would have been fried, or maybe nothing would have happened at all.

I'm confident, however, that the UPS I use at home has paid for itself several times over. I realize that it seems like a bit of a stretch to shell out money for a device that does nothing 99 percent of the time, but sooner or later, in the blink of an eye, you will get a return on your investment.

In today's business environment there is no excuse not to have a UPS on every critical machine. By critical machine I mean any system that performs a function important to the day-to-day operation of the company,

which should apply to almost every machine on site.

Estimates vary on the cost of a single hour's down time, but even if these less-than-empirical studies are inflated a little to support the marketing efforts of those in the power-protection business (which may or may not be the case), they are still much higher than you would imagine.

## Do the math

The equation to work out the cost of one hour's downtime goes something like this: the number of computers, times the number of employees, times the average hourly earnings, plus the cost of lost business per hour's downtime, the cost of service calls, and the cost of replacing or recreating any damaged hardware and reinstalling software or data.

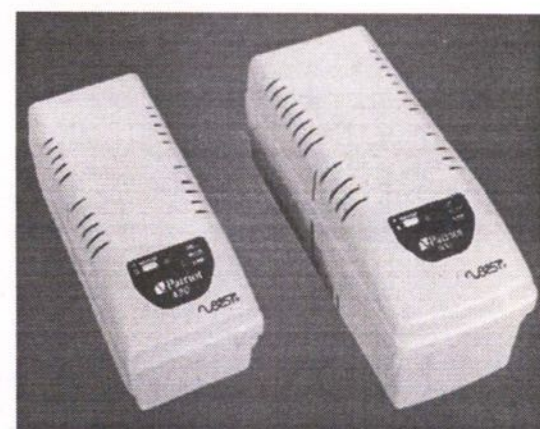
It is not uncommon for a business to

report revenue losses well in excess of \$50,000 for one hour of downtime. That money would buy a whole lot of UPSes.

Obviously, buying inexpensive UPSes for each computer would not alleviate this cost altogether, as they will only run the equipment for a few minutes. They would, however, take a considerable chunk out of the cost of downtime by protecting equipment and data and allowing the orderly conclusion and saving of tasks in progress.

Here's some truthful marketing, according to APC, the manufacturer of several popular UPSes and power-protection devices. PCs are not like eggshells. Many good-quality vendors build in strong tolerances for the barrage of power anomalies that PCs face on a daily basis.

You probably are not even aware of the frequency with which power problems hit your computer because of the protection already built into the PC. Secondary power-



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equipment is turned off, due to the extra voltage being dissipated through the power line.

• **Noise:** Electrical magnetic interference (EMI) and radio frequency interference (RFI) are both caused by factors such as electrical storms, relays, electric motors, and microwave radiation.

## Know what you're getting

UPSes are typically used to take care of sags and blackouts, but some models also come with surge and spike protectors and power-line conditioning. Power problems can be the source of several intermittent computer glitches; they have been traced to inexplicable keyboard lockups, communication interruptions, system lockups, monitor flickering, and hard-drive and software crashes. If any of these symptoms sound familiar, you could already be experiencing the problems with power.

One last angle on buying a UPS: most of us are risk averse, meaning that we are willing to pay relatively large sums of money to alleviate small amounts of risk. This is why the insurance industry does so well.

Even if you are risk neutral (meaning that you would only buy something like insurance or a UPS if the expected value of the loss—in the case of power protection, the probability of damage by a power problem multiplied by the expected loss due to the damage—was greater than the cost of the insurance), however, you should give serious consideration to buying a UPS.

In a nut shell, if you would buy any insurance other than that which you are mandated to have by law, you should, upon consideration of the facts, buy a UPS for your computer.

I guarantee you'll learn to love it. □

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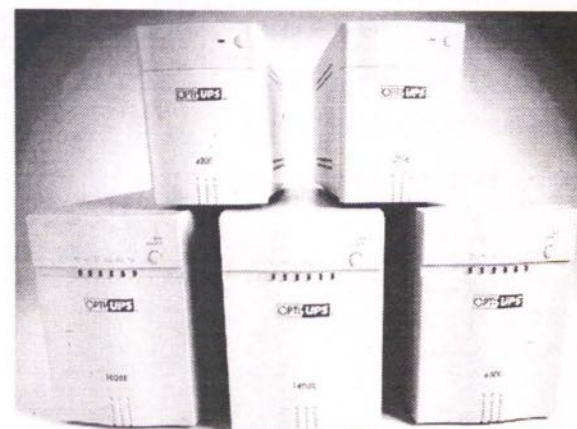
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protection devices are needed for the "out-of-bounds" type of power events. These events fall into several categories:

- **Sags:** A short-term decrease in the voltage level. Sags are caused by the start-up demand of an electrical appliances. Ever noticed the lights flicker when the refrigerator motor kicks? Steady periods of lower voltage are more commonly known as brownouts. Brownouts can be caused by the providers of electricity who may have to lower voltage levels to meet demand at peak times.
- **Blackouts:** Hey, where'd I put those candles?
- **Spikes:** A rapid, dramatic peak in voltage, caused by such things as lightning strikes, or when utility power is restored after a blackout.
- **Surges:** A short-term increase in voltage, which may be caused when high-powered

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|-----------------------------------|---------------------|-------------------|-------------------------|------------------------|----------------|-----------------|-----------------|------------------|----------------|
| Time-to-battery warning (Min:Sec) | 6:36                | 41:12             | 39:54                   | 18:48                  | 44:28          | N/A             | N/A             | 17:58            | 43:45          |
| Time to total failure (Min:Sec)   | 7:55                | 43:34             | 41:28                   | 21:22                  | 49:06          | 20:11           | 22:18           | 20:16            | 44:54          |
| Maximum capacity (VA,W)           | 250, 150            | 700, 450          | 660, 400                | 420, 260               | 600, 375       | 450, 280        | 450, 280        | 400, 240         | 650, 410       |
| Dimensions centimetres (WxDxH)    | 13.7x42x6.35        | 13.7x35.8x15.7    | 13.2x39.3x16.5          | 12.7x29.2x12.7         | 11.4x39.8x16.5 | 11.7x37.5x16.25 | 11.7x37.5x16.25 | 10.9x26x18.5     | 13.7x42.6x19.5 |
| Dimensions inches (WxDxH)         | 5.4x16.5x2.5        | 5.4x14.1x6.2      | 5.2x15.5x6.5            | 5x11.5x5               | 4.5x15.7x6.5   | 4.6x14.8x6.4    | 4.6x14.8x6.4    | 4.3x10.3x7.3     | 5.4x16.8x7.7   |
| Weight in kilograms (pounds)      | 3.2 (7.0)           | 13.1 (29)         | 12.7 (28)               | 5.9 (13)               | 11.3 (25)      | 10 (22)         | 10.9 (24)       | 5.8 (12.8)       | 13.0 (28.7)    |
| Outlet receptacles                | 3 *                 | 4                 | 4                       | 2                      | 4              | 4               | 4               | 3                | 4              |
| Network surge suppressor          | Yes                 | No                | No                      | No                     | No             | Yes             | Yes             | No               | Yes            |
| PC serial interface               | No                  | Yes               | Yes                     | Yes                    | Yes            | Yes             | Yes             | Yes              | Yes            |
| Price                             | US\$179             | US\$549           | \$779                   | \$259                  | \$699          | \$419           | \$525           | \$299            | US\$459        |
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\* This unit contains six outlets, all of which act as surge suppressors, but only three of which provide battery backup

## Testing the UPS

When it came to testing the uninterruptible power supply (UPS) units, we had to decide on what approach we would take. Open up the manual of any one of these units, and you'll quickly realize why we've opted to make the comparison chart simple and easy to understand.

By looking at an actual UPS, most people would never imagine the complexity and ingenious design behind it, as is evident by the vast amount of technical information found on the specification sheets of the individual products.

To test the UPS, we conducted a simple test using a PC with the following configuration: a Pentium 133 MHz processor, 16 MB of RAM, 1.08 GB HD, a Trident PCI video card, 6x CD-ROM drive, 1.44 floppy, an internal 28.8Kbps faxmodem, an SB-16 sound card and a 17" monitor. The maximum power consumption on the PC itself was 200 W, and the monitor was an additional maximum of 120 W. The system was started with Windows 95, and once the boot process had completed, we cut the power to the system and let the various UPS systems do their jobs.

We kept track of two times. The first was when the UPS warns you that its battery is running low, the second was when the UPS

would actually shut itself off.

Every UPS is rated for a certain maximum amount of power which it is capable of supplying. Technically speaking, this can be represented in two ways. The most common unit used to identify power consumption is watts (W). However, electrical engineers decided they'd rack their brains and come up with another method known as volt-amperes (VA). In all fairness, both units mean the same thing, namely how much power is being consumed by a given device.

Some of the products listed have support for an RJ-45 network connection. These connectors will suppress any surges (sudden increases in power) which may otherwise

destroy sensitive hardware. This is more of a concern in an office environment, and not as much for home personal use, unless you're the type that has your entire house wired from corner to corner, wall to wall.

If you're into monitoring everything that goes on around you, most of the products we looked at have a serial interface which allows constant communication between your PC and the UPS, and allows you to keep an eye on everything from current voltage levels to the temperature inside the UPS itself.

Indeed, as you can see from the differing features, prices and capabilities, there is a UPS for many different types of applications.—Steve Halinda

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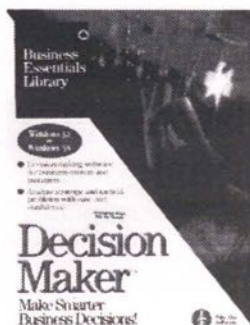
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# Deciding how to decide

## A look at decision-making software

BY ROD LAMIRAND

Title:  
DecisionMaker  
From:  
Palo Alto  
Software  
Suggested  
Retail Price:  
\$US149.95



grams is to allow a considered, informed, calculated decision about various possibilities and to have a documented explanation of that decision for analysis and/or later evidence of research and reasoning.

### Choice One

DecisionMaker is a small, one-disc, Windows 3.11, Win 95 or Macintosh program that will run just fine on 4 MB. The software installed on my machine easily and quickly and ran without trouble. There is an adequate Help file and a manual with some explanation and a number of examples.

The interface is very simple and straightforward, once the user has spent some time understanding how to organize a problem and assign values. DecisionMaker is primarily aimed at business use. If you are thinking of expanding your company, hiring another partner or any of dozens of other decision-making plans, then DecisionMaker wants your business.

Here is how it works. The program is based on using a branching tree where you enter decisions, known and unknown events and other information. After you have understood and set up a proper representation of the problem you must step through the tree and make educated guesses as to the likelihood of certain events happening, or a best, and worse, case for each scenario.

When you have done that, the software will analyze the data and choose an overall recommendation based on the data you entered. You can view the data as a chart, scatter graph or numerical tree. Also available is a risk-attitude tool which will allow you to select from a five-point scale ranging from Risk Seeking to Risk Adverse. This may alter the program's recommendation depending on how close the various scenarios are.

I found the program to be useful for business scenarios, but it felt limited for other uses. Understanding the numerical rating system takes a bit of work, but it is logical when understood. There is good value here because of the

low price, but you get what you pay for. When I set up a scenario to answer the question of which program would I buy, DecisionMaker recommended the competition.

### Choice 2

Which & Why is a four-disc Windows 3.1 or higher program that I reviewed under Win95. It uses 13 MB of disk space and runs in 4 MB RAM. The product advertises itself as "decision software for professional management."

A broader program than DecisionMaker, Which & Why can handle almost any type of decision. At its root, this software uses the same type of branching tree, assigning of probabilities and product recommendation as the other program. However, the interface is much more functional and elegant. The model view shows us a series of four vertical columns and selecting one button displays the branches beneath it in the next column. The charts and graphs that can be selected to compare different items are very cool.

For example, let us say that you are buying a house. You could input hundreds of particular details about each house, if you were so inclined, and compare them as a total or in parts. A line chart of their differences would make it easily apparent where they differed. In this case you would not even be forced to set up the categories—Which & Why has already made up a model for comparing houses; just as they have for buying a company jet, choosing a university, deciding on a corporate relocation and about 100 other situations.

If you do have to set up a model from scratch, the brainstorming utility will help you get moving in minutes. As well, once you enter various items that must be taken into consideration, you simply drag and drop them onto, or beside, each other to make the model.

The Pairwise comparisons are very useful, allowing you to simply state that one thing is more important than another. As you go through all the details the software will keep track of which items are more important, and even by how much, before it makes a recommendation. Are some things a must? Fill out the Must Haves and it is done.

### The decision

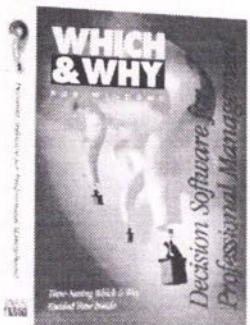
Which & Why is a well thought out, very useful program that has many more features than I have mentioned here. If you want to make the right decision, and have the documentation to show that you looked at, and considered, every relevant detail, Which & Why is the right choice for you. Which & Why recommended itself as the program that I should most likely buy if I were purchasing such a product. □

Contact: Palo Alto Software, 144 E. 14th Ave., Eugene, Ore., 97401. Tel: 503-683-6162.

Fax: 503-683-6250. E-mail: pasware@aol.com  
Arlington Software Corp., 200-614 St. Jacques, Montreal, Que., H3C 1E2. Tel: 514-954-3665.

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Retail Price:  
\$349



For a reviewer, deciding when the features and functionality of one program outweigh another can be a difficult and sometimes subjective thing. With this assignment—reviewing decision-making software—I thought it pleasantly fortuitous that the solution to my problem lay within itself.

The Problem: Two programs both help a user make solid, documented decisions. Each program uses a different method and aims at a slightly different audience. Which is "better?"

Of course, using the decision-making software itself to decide which is the better product is a logical idea but it has a downside. If each program selected a different product, then did they work? The purpose of these pro-

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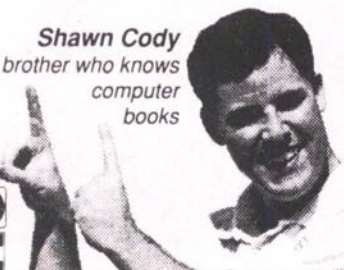
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# TV the loser, print the winner in Internet evolution

BY BOB WOODS

NEW YORK, N.Y. (NB) — As more and more people move away from the TV screen to the computer screen, an older form of media is actually picking up readers, a new study from Coopers & Lybrand Consulting shows.

The survey, called *Electronic Access '96*, shows the Internet and its World Wide Web component are taking away TV viewers, but are boosting the sales of print media. In the broadcast medium, 58 percent of Internet users said the time they spend online is shifted directly from time previously spent watching TV.

Internet usage is not taking away from the print medium, the survey said. In fact, people are spending more money on Internet-related books and magazines than in making electronic purchases on the Net.

Thirty percent of those surveyed said they

read magazines or books on the Internet, and almost two thirds of those who have looked at an online publication consider it a complement to a paper version, rather than a substitute.

Three distinct Internet "users" are emerging, the survey said, with 54 percent of them being "browsers." This group seems to have primary interests of browsing, general information, e-mail, and databases.

"Communicators," or 22 percent of online users, tend to be well-educated males who have used the Internet for at least two years, and are very comfortable with technology.

The third group, "Information seekers," make up 24 percent of the online population. Information seekers are less technologically adept and are likely to have young children.

When it comes to learning about Web

sites, 39 percent use traditional media, 44 percent depend on word of mouth, and 32 percent stumble across sites while they are browsing. Only 10 percent learn of Web sites through links from other sites, the survey said.

Concerns about security are stifling electronic commerce on the Web, with 80 percent of online users indicating they are concerned about the safety of financial data on the Net.

In general, more than one third of American households and 58 percent of sur-

vey participants have at least one computer. Of the study participants who have computers, 29 percent use the Internet and another 34 percent say they are somewhat likely to use the Net this year.

The survey is based on telephone interviews with 750 people who were a subset of 1,600 people originally interviewed in 1994 for a similar study. The 1,600 interviewees projected a 41-million American household population with incomes of \$35,000 and more. □

## Are you ready for Ready?

Continued from page 54

(At the other end of the Ready line, the 9619 will run you \$4,179—post price reduction—and give you a Pentium 166 with 16 MB EDO RAM, a 2 GB hard drive, 2 MB video RAM, the same 28.8Kbps fax/modem, a 6x CD-ROM drive, a microphone and 16-bit sound, but with a couple of decent 20-watt speakers.)

When I opened the case, the first thing that struck me was that the four ISA and two PCI slots were connected to the motherboard by means of a perpendicular riser card inserted into a dedicated motherboard slot.

The next thing that struck me was that the fax/modem was the only card occupying any of the expansion slots. Which means, I'm afraid, that all the I/O and the sound card are integrated onto the motherboard, so you have no choice about either (though not unusual on a PCI board I/O-wise, I would ultimately prefer to be able to pull the sound at my leisure).

The only other unusual inner observation was finding two fans—one integrated into the power supply and another for cooling the actual guts, which is a very good sign that NEC is thinking ahead.

On the outside, though, I found something that I still think is gratuitous but know is bound to be the norm at some point in the future—a remote-control receiving window

and, of course, remote hand set.

Adding yet another clicker to the household collection, you can use the hand set to control your CD-ROM when listening to audio CDs, operate the telephone (answer dial, and redial) and telephony (voice greetings, auto answer, and message playback) features of your fax/modem—the latter are the increasingly popular functions that are killing the answering-machine market.

Strangely enough, however, though the remote-control feature is apparently infrared (IR), I couldn't find any documentation to indicate whether IR links can be established with peripherals equipped likewise. It would be a logical extension of the technology. And it might do it. I just couldn't prove it.

Finally, along for the ride is a genuinely impressive array of free software, far too much to list here. Some of the highlights, though, include Windows 95, NEC's own Merlin multimedia tutorial (nothing to do with Merlin, the code name IBM is using for the next version of OS/2), MS Works, Encarta, kids stuff, games, six separate packages for your sound card and a cornucopia of utilities for your fax/modem and other hardware. □

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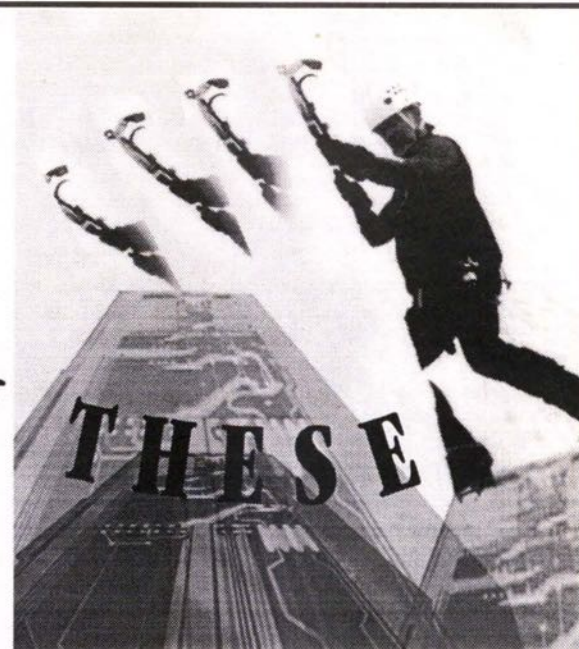
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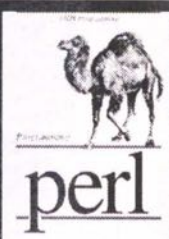
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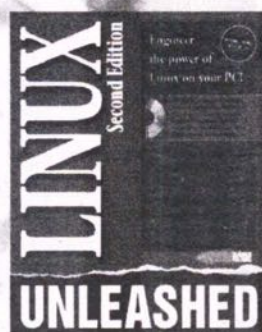


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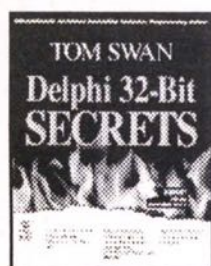
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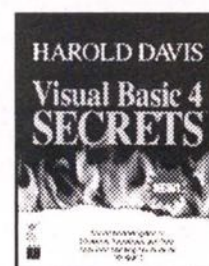
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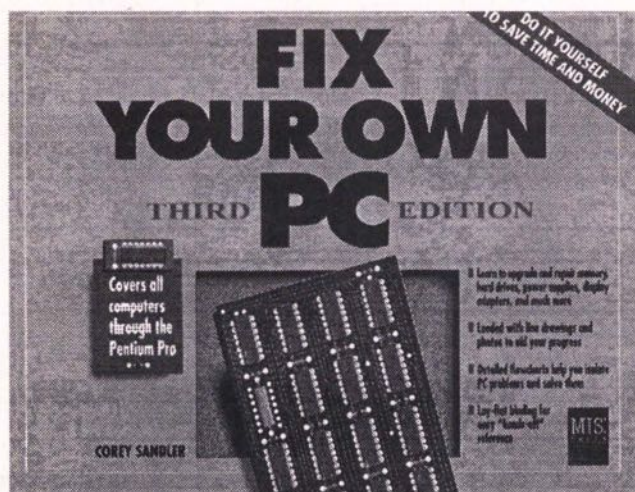
# A guide to your PC's inner workings

BY KEITH SCHENGILI-ROBERTS

## Fix Your Own PC, 3rd Edition

Author: Cory Sandler  
 Publisher: MIS Press  
 Price: \$41.95  
 ISBN: 1-55828-422-2  
 Softcover, 462 pages, 1996

PCs invite tinkering. More to the point, to get many PCs to work, people are often required to "open up the hood" and be willing to poke their hands into the machine's innards. The documentation for most hardware components is written in its own special language, making it a real challenge for somebody who simply wants to insert a new modem or video card into their PC.



to keep your aging dinosaurs in good condition and what to look for when upgrading.

Unfortunately, there are some basic economics that may be slowly working against books like this. This book is really made for do-it-yourselfers, who are willing to upgrade their PCs themselves rather than buying new machines. Problem is, it is often cheaper to buy a whole new system than buy individual components, even over a length of time.

for itself in terms of the time saved and hassles avoided. □

### Rating:

Information content: \*\*\*

Readability: \*\*\*\*

Intended for: Beginner / Intermediate

Overall Rating: \*\*\*3/4

Contact: Fitzhenry & Whiteside, Tel: 905-477-9700

**Its troubleshooting sections may be well worth the price of admission on their own, and the book has lots of good advice on how to keep your aging dinosaurs in good condition and what to look for when upgrading**

That's where books like *Fix Your Own PC* fit into the picture—they are there to help you sort out the mass of circuitry and components in a PC into something that you feel you can work with.

There are few titles in the computer book publishing industry that go through several editions. Technology changes so fast, and there are so many titles for readers to choose from, that constant revision of a single title is usually a good sign that the book is worth getting.

This is the case with *Fix Your Own PC* by Cory Sandler. It is a good, solid book on dealing with your PC's hardware, now in its third edition. The book takes a straightforward, no-nonsense view of things—it tells you what components are good for your PC, and what will rapidly become obsolete.

The book delves into the basics of motherboards and bus designs, and with that foundation in mind, goes on to cover such things as using hardware diagnostic software, installing Pentium upgrade chips, updating your hard drive, adding multimedia to your system and more.

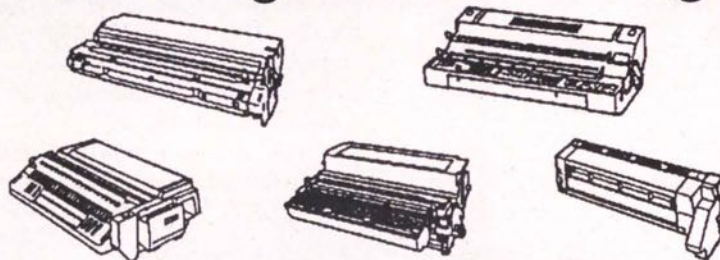
While it will not be thorough enough for professional technologists, like systems administrators, it is certainly enough for the rest of us who will replace, or are contemplating upgrading, our computer system over the course of the next year.

Its troubleshooting sections may be well worth the price of admission on their own, and the book has lots of good advice on how

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# Weaving your own Web site, Part X

## Microsoft Internet Explorer HTML tags, Part II

BY KEITH SCHENGILI-ROBERTS

Last time, we looked at just two of the hypertext markup language (HTML) tags that are (or were) specific to Microsoft's Internet Explorer—the <MARQUEE> and <BGSOUND> tags. This month, we are going to look at a few other Internet Explorer specific tags, that will help liven up the text and add some color to your tables.

### Font-o-rama

Netscape started using the <FONT> tag as an alternate way of changing the size of text without having to resort to using the header (<H1> ... <H6>) tags. Microsoft takes the idea of the <FONT> tag to its logical conclusion by specifying the specific font and color that appears on your Web page when viewed through Internet Explorer.

You can use Internet Explorer's extensions to the <FONT> tag to good effect to emphasize particular sections of text on a Web page. Any font name will work, but it needs to be the actual name of the font installed on the user's system. There is no way you can determine what fonts are resident on a user's system, therefore Microsoft has built in the ability to "cascade" several font names, by specifying multiple fonts separated by a comma, as in the following example:

```
<FONT FACE="ARIAL, HELVETICA, GENEVA, SWISS, SANS SERIF"></FONT>
```

Internet Explorer uses the first font it finds from the list that it locates on the user's system. The example provided is a good example of common sans-serif fonts found on many different computing platforms, and will almost certainly find a match on Windows and Mac systems.

There are about five different font types that are reasonably universal: Arial, Times Roman, Courier, (MS) Sans Serif and WingDings. The last one is not particularly helpful unless you want your page to display gibberish characters to anyone viewing it with Internet Explorer.

You can also change the color of text by using the COLOR attribute. This works the same way as the <BODY BGCOLOR> tag—you can either specify the font color using a hexadecimal number in the usual rrggbb format, or specify it by colname. To display some sans-serif text on a page in red, you could use the following:

```
<FONT FACE="ARIAL, HELVETICA" COLOR=FF0000>This is red text.</FONT>
```

or

```
<FONT FACE="ARIAL, HELVETICA" COLOR=RED>This is red text.</FONT>
```

For the record, the 16 colnames are: black, silver, gray, white, maroon, red, purple, fuchsia, green, lime, olive, yellow, navy, blue, teal and aqua.

### Colorful tables

Netscape Navigator was the first browser to incorporate tables, but Internet Explorer adds a few interesting extensions, which allow

Web authors to further emphasize their tables.

Using these extensions, you can align tables on a page, add a caption to a table, or change the background color of an individual cell.

Using the ALIGN attribute in conjunction with the initial <TABLE> tag, you can now display your tables on either side of your Web page. Use <TABLE ALIGN=LEFT> to have your table appear on the left side of the page, or <TABLE ALIGN=RIGHT> to have it appear on the other side.

To add a caption to your table, use the separate <CAPTION> ... </CAPTION> pair of tags. You can place your caption above or below the table by using VALIGN=TOP or VALIGN=BOTTOM respectively, and use ALIGN=LEFT, RIGHT or CENTER to draw the caption flush left, right or centered with respect to the table. Note that this tag must be used in conjunction with a table.

There are a number of color options that can be used within tables. One is the BGCOLOR attribute, with which you can set the background color for a cell, row or the entire table by specifying the font color using the hexadecimal rrggbb format, or by colname.

You can set an independent color for the border by using the BORDERCOLOR attribute and specifying a color value for it. The following example shows a table with a teal background color, a yellow border, its first row marked in blue, and the cell containing the letter "E" in aqua:

```
<TABLE BORDER BGCOLOR=TEAL BORDERCOLOR=YELLOW>
<CAPTION ALIGN=CENTER VALIGN=TOP>From A-F</CAPTION>
<TR BGCOLOR=BLUE>
<TD>A</TD>
<TD>B</TD>
<TD>C</TD>
</TR>
<TR>
<TD>D</TD>
<TD BGCOLOR=AQUA>E</TD>
```

```
<TD>F</TD>
</TR>
</TABLE>
```

That's not all though. By using BORDERCOLORLIGHT or BORDERCOLORDARK you can control the colors that are used to add the 3D effect to the frame of a cell. BORDERCOLORLIGHT is used to specify the 'highlight' color, and BORDERCOLORDARK is used for the 'shadow' color. So in the following example:

```
<TABLE BORDER BGCOLOR="BLUE" BORDERCOLORDARK="NAVY"
BORDERCOLORLIGHT="TEAL">
```

not only sets the background color of the table to blue, but by altering the highlight and shadow colors for the cell frames, maintains the blue tone even in the 3D border colors.

With the release of Netscape Navigator 3.0, it is now possible to use BGCOLOR attribute in Netscape tables, but none of the other Internet Explorer attributes seem to have been adopted.

### Capital dropping

One other nice touch you can add to the display of text on your Web page with Internet Explorer tags is to add drop caps. A drop cap is when the first character of a paragraph is larger than the rest of the paragraph, and its baseline extends below that of the first line of the paragraph, which also results in the second line (or more) of the text being indented.

Many drop caps you see on Web pages are image files, but since images are generally loaded after text, you can end up with a Web page that seems to be missing the first letter of its paragraphs, until the image finally loads. There is no <DROP CAP> tag in Internet Explorer, but you can get the same effect by using a combination of the <FONT> and <TABLE> tags.

The idea is to create a table aligned flush left which has no border and con-

tains a single cell for the drop letter. With that in mind, you can create the following code for a drop cap effect:

```
<TABLE ALIGN=LEFT CELSPACING=0
CELLPADDING=0>
<FONT SIZE=+3>T</FONT>
</TABLE>his sentence begins with a drop cap.
```

You can take things further and add a background color, change the color and type of font:

```
<TABLE BGCOLOR=SILVER ALIGN=LEFT
CELLSPACING=0 CELLPADDING=0>
<TD><FONT FACE="HELVETICA, ARIAL"
COLOR=FUCHSIA SIZE=+3>T
</TABLE>his sentence begins with a drop cap.
```

You can also add italic and/or bold tags to further emphasize the drop cap.

For more information on various ways to create drop caps, see Robert B. Hess's excellent Drop Caps page at <http://www.microsoft.com/int-dev/author/dropcaps.htm>

### Future developments

There are still more tags that could be covered in this article, such as the <AREA> tag used with image maps, fixing a watermark onto a page, setting the left margin for a page and several others.

These and the characteristics of all of Internet Explorer's tags can be found on a handy document called the "Complete List of HTML Tags" at <http://www.microsoft.com/ie/author/htmlspec/ie20html.htm>.


Meanwhile, the people at Microsoft are busy working on the next version of Internet Explorer. One of single biggest changes you can expect to see in Internet Explorer 3.0 is support for cascading style sheets.

These sheets provide an easy mechanism for adding layout and visual formatting information to a Web page, but will still provide a viewable Web document to a browser capable of understanding only strict HTML 2.0 tags and attributes.

You will be able to specify character styles (i.e. boldness, italics, alignment, and font size), select fonts, and set the color for both the text and the background color for individual elements on a page. You will also be able to display bitmap images beneath specific text, or control the vertical and horizontal layout of individual page elements. Expect another article or two on this topic when Internet Explorer 3.0 is released. □

Thanks go to Robert Hess, software design engineer with Microsoft's Developer Relations Group, for help with this article. Next time: Inserting Java applets into your Web pages.

Keith Schengili-Roberts welcomes any comments, suggestions or HTML tips and tricks you may have. You can email him at: [kschengi@interlog.com](mailto:kschengi@interlog.com).



### Getting run over on the info highway

The rapid evolution of hypertext markup language (HTML) can sometimes make you seem like a liar.

Last month I concentrated on two Microsoft Internet Explorer tags that I said would require some fancy Java applets to accomplish the same thing with Netscape.

On May 1, Netscape Corp. launched the beta of Netscape Navigator 3.0, which—surprise, surprise—essentially incorporated these tags.

As of the time of writing, Netscape has not released details about how these tags function in Netscape Navigator, but the company does say that it "supports new HTML tags and attributes for a variety of new capabilities, including table background colors and audio and video embedding". Sound familiar? —KS-R



# Web evolution

## Technology is changing most rapidly on the World Wide Web

BY JAMES MACFARLANE



While the Internet may be the greatest thing since the toaster, it's really the toast that matters. Fortunately, toast is evolving very quickly.

There's no doubt that science and technology are causing rapid change. There is no more obvious indicator of this change than the computer industry. We all know that no sooner do we buy a computer, than there's a faster, better one on the market. But realistically, computers only drastically change about every four years as new generations of central processing units (CPUs) and bus technologies hit the market.

Software, on the other hand, changes more rapidly because it doesn't depend on manufacturing of hard goods, nor is it dependent on the invention of new semiconductor technologies. New versions of software come out about once a year. So a software generation is much shorter than that of the computer hardware.

But even software is evolving at a slow pace compared to the Web.

### The Net isn't changing; the Web is

If you look at the main applications of the Internet—mail, newsgroups, ftp and telnet—they've changed very little since the Internet began. Sure, they may have been given prettier faces with graphical client software, but the World Wide Web is where all the action is.

The Web reinvents itself about every three months. It is a never-ending succession of upgrades, plug-ins and news features. Keeping up with it all, even for me, has been a lot of work. Compare a three-month generation cycle to any product in any industry and you can understand that the Web is evolving at a breakneck pace. Here are some of the things that have gone on (remember, most of this has happened in the last year):

- The Web used to do three basic things: display formatted text, display images and include hypertext links to other Web pages. There were no fonts and no colors. It was basically a grey screen with black text and some images.

- Web pages were static: once they were put online they didn't change until someone changed them. Something called CGI (common gateway interface) allowed people to perform simple animation and to link their Web pages to databases and other "live" data. All Net search engines rely on CGI scripts to do their work.

- Netscape added a few extra features, which weren't part of the hypertext markup language (HTML) specification, but they were such good ideas that everyone adopted them. They added the ability to display background images or "wallpaper" on a Web page, and they also added the ability to create tables to perform more complex layout tasks.

- Other companies started creating "helper" applications. These weren't things that were directly tied to the Web specifications directly, but they used the Web as a handy interface to do new things. One of the first was Real Audio. This was a special client/server application that allowed audio signals to be transmitted in real time over the

Net. This allowed audio attachments and music to be added to Web pages without requiring the user to download huge WAV

files. Today, many radio stations are broadcasting on the Net using this technology.

- HTML has its limitations on how it can

format text. Adobe created a work-around called Acrobat. It allowed you to "print" doc-



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uments from any application to a special file format called PDF. These PDF files could be viewed by a freely available viewer. The PDF files looked very much like the original documents. Today, many companies are publishing their documents online in this format.

- What HTML does for flat documents, VRML (virtual reality markup language) does for 3D. It sends coordinate information to a VRML browser, which then renders 3D polygons on the user's screen.

- Once, one of the major drawbacks of putting documents on the Web was convert-

ing them to HTML. This usually had to be done painstakingly by hand. Then, Microsoft came out with a collection of free viewers that allowed people to view files in their native format. For example, if you click on a link to a Microsoft Word document on someone's Web page, and have a copy of the Word viewer on your machine, you can download the file and view the document, just as it would look inside Word, and you don't even need to have a full copy of Word to do it. Viewers became available for all Microsoft Office applications.

- The most important development on the Web was the creation of Java by Sun Microsystems and Netscape. Java is a platform-independent development system that can be used to build online and stand-alone Internet-aware applications and embed them in a Web site. Java promises to transform the Web into a global shared workspace. Microsoft and Netscape continue to add new features to their browsers for font support, and something called frames that allows a Web page to be a container for multiple sub-documents.

- New technologies, like Web-based tele-

phone and chat services, are built-into the latest version of Netscape.

- New plug-ins, like Macromedia Shockwave, allow for a multimedia authoring approach to site design, providing a more robust and flexible method of designing rich online material.

- Many companies are working towards standalone network computers that have no operating system, but instead use Java and a Web browser to provide all functionality and applications via the Web.

That's just a sampling of what has been going on. Never mind the advancements of the content of the Web and what all this functionality has allowed people to do, this is just the nuts and bolts. □

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## Why cats paint

Why cats paint is the topic of the Museum of Non-Primate Art Web site. Not only do cats paint, but they like to paint. There are actually special cat artistic aptitude tests, cat painting products and information about great cat artists.

Sound wonky? A hoax? My cats did not offer an opinion on the matter. The site does have a "spot the fakes" area for those interested.

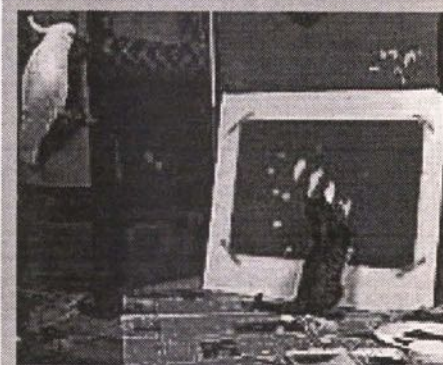
If you're really interested, you can buy the book, *Why Cats Paint: A Theory of Feline Aesthetics*, which is sold through the Web site. The book is by Burton Silver and Heather Busch US\$16.95.

The book abstract describes: "Should the marks a cat makes be treated as art, or are they simply forms of territorial behavior? This book is an unprecedented photographic record of cat creativity that will intrigue cat lovers and art lovers alike. As far as we know, no theory of feline aesthetics has yet been presented, at least not with such remarkable clarity and thorough documentation. Now, many aspects of heretofore unexplained cat behavior can be understood within the familiar context of art." —JM

Contact: Museum of Non-Primate Art

Web site:

<http://www.netlink.co.nz/%7Emonpa/index.html>



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sent in by:

Norma Peretto of Verona.

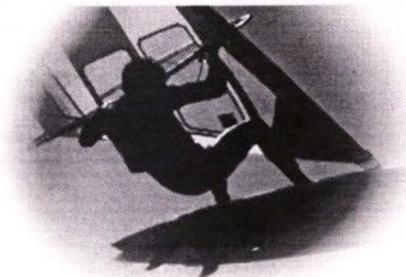
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# From Alta Vista to Yahoo

## Searching the World Wide Web

BY KEITH SCHENGILI-ROBERTS

One thing that is obvious to anybody who has been on the World Wide Web for more than a few minutes is that it is huge.

There are literally millions of Web pages out there dealing with a myriad of subjects. You can find pages dedicated to your favorite TV star, check out the local movie listings, download free software, discuss controversial topics with others, and discover score upon score of pages devoted to all sorts of subjects you could possibly think of.

So, how do you find Web pages of interest to you on the Web? This is where Web search engines and directories come in. These are large database systems kept at a Web site that contain links to the millions of sites on the Internet. A Web search engine lets you search for things by keywords, while Web directories contain information on Web sites in a tree-like structure, with various headings and sub-headings of common subjects and topics, many of them linked across subject categories.

The introduction of advertising dollars has made a big difference to the world of search engines. By their nature, search engines draw large numbers of people to their sites daily. This has led to the development of the now ubiquitous "banner ads" appearing at these sites. Users suffer a slight inconvenience by having to view them, but in return, get to use the search engine for free, which is not a bad arrangement.

Competition for Web-bucks is increasing, and several new players have appeared on the scene recently. Web surfers can only benefit from this development, but the problem remains—where to start searching?

If you actually do a search for "search engines" or "searching the Web" at any search engine site, chances are you will get dozens of potential places to visit. The best way to start is to check some of the big ones out, and, find out what they do well and know their weaknesses, and begin any search based on the type of information you are looking for.

### Alta Vista

<http://www.altavista.digital.com/>

Alta Vista is a relative Johnny-come-lately in the world of search engines, but it is easily one of the best around. Designed by Digital Equipment Corporation and using its hardware and software exclusively, this site has the best claim to having the largest single Web index.

Alta Vista was the result of a project started last summer at DEC's Research Laboratories. It went public Dec. 15. While there are no ads at Alta Vista, the whole site is essentially a big advertisement for the DEC equipment used to create the site—and it reflects positively on DEC.

At the time of writing, 22 million Web pages containing more than 11 billion words

are lodged in its index. Users look for Web pages or Usenet postings through a keyword interface. It is one of the zippiest of the search engines around, with the 64-bit addressing system of several DEC Alpha machines storing nearly 6 GB (that's gigabytes) of Alta Vista's 33 GB word index in its main memory, and handling hundreds of requests simultaneously without a hitch. You do not have to wait long to get a response at Alta Vista.

The user interface is very simple—type in a keyword or keywords in a field, click the Submit button, and a few seconds later the first of what is often hundreds of positive "hits" from your keyword appears. All of the responses are rated in terms of the closest match to your keywords, and you can opt to have them listed in a standard, compact or detailed format to further refine your search.

Alta Vista also lets you use boolean operators like AND, OR and NEAR to help you narrow things down. One of the problems of many other Web search engines is that the data they contain are often outdated. Alta Vista claims to have the fastest Web "spider" program, which fetches new information about the Web at the rate of 2.5 million pages per day.

One feature Alta Vista has that—until very recently—no other search engine had is the ability to search for all of the other pages that link to your Web page. Alta Vista essentially contains the entire Web on its computers, so it was not a problem to add this feature that not many people seem to know about: simply type "link:[http://\[your Web page URL\]](http://[your Web page URL])" in the search field and it dutifully returns all of the Web sites that link to yours.

Alta Vista contains a host of superlatives—fastest, most Web pages indexed, most frequently revised and updated—but does that make it the best? It all depends what you are looking for. Beginning users may find search engines like Alta Vista a bit daunting—especially if they are unfamiliar with methods of narrowing down their search terms to return a manageable number of pages to check out. But Alta Vista is the place an increasing number of experienced Web searchers go to for information—currently it gets about four million requests daily.

### Excite

<http://www.excite.com/>

Excite is another relative newcomer to the roster of search engines, but it intends to take the Web by storm. Excite wants to be your one-stop virtual convenience infomart. In addition to a sizable index containing over 11.5 million pages worth of information, it has reviews, news and things to amuse.

At Excite you enter a concept or keywords to search, and it returns any and all information it finds. When Excite searches for new Web pages, its "concept-based" technology



tries to determine what the dominant themes or terms are on a given page, and then tries to summarize it for search purposes.

Excite also accepts various boolean operators such as AND, OR, NOR and NOT to aid in your search. You can also set wholly inclusive or exclusive search terms, so that Monty+Python returns only documents containing both words, while Python-Snake excludes any pages that contain both words. The search strategies seem to be well thought out, but in the end, the search results are really no better and no worse than any of the other Web search engines of its type.

The way Excite automatically sums up the information it finds often leaves something to be desired, and unlike the majority of other search engines, it does not retain a cache of your search request. So if you check out a site, don't like it, and hit the "previous" button, don't expect your search results to be waiting for you.

But that's not all the services Excite offers. Taking its cue from Magellan, Excite has hired "professional journalists" to search for and review sites that might be of interest for its audience. Excite has amassed a database of over 50,000 Web site reviews. You can also do searches on Usenet, and read the latest news stories from a Reuter news feed that is updated every hour. There's also a weekly cartoon from Bill Mitchel, and columns on various subjects.

Excite's recent articles included advice to people whose computers have contracted a virus, how to survive an audit by the Internal Revenue Service in the United States, a review of the Coca Cola site, and finding information about Iceland on the Web.

Excite seems to be into giving its audience a smorgasbord of info. Is Excite an all purpose infomart or a case of infoglut? That's for you to decide.

## Inktomi

<http://inktomi.berkeley.edu/query.html>

Inktomi is part of research project being conducted by the University of California at Berkeley into distributed computing. It uses four Sun SparcStation 10s computing in parallel. And the idea is that, as the Web grows, it will be able to keep pace by simply adding more machines to the system.

That's all very well, but it is not the fastest Web search engine, and has all of the rough-edges of a pilot project.

While it too has a sizable database of Web pages, it has a clunky-looking interface, and is not as user-friendly as some of the other search engines. In terms of its interface, it looks a lot like the state of the art for Web search engines a year ago.

Inktomi also makes some assumptions

that users may not always appreciate. It removes common endings, such as "ing" and "ed", from any word you enter as a search term. So if you enter a word like "hunting", you will get matches on "hunted" and "hunt" as well. This can have the effect of unnecessarily expanding your search terms, and can be annoying if you are doing a search on a proper noun.

The name Inktomi comes from a spider from Plains Indian mythology that brought culture to the people. He was also a trickster character, and became a representative for the underdog.

This is only a research prototype that has a lot of room for expansion, and has a good technological underpinning. It may not be much to look at right now, but this may change with time (and substantial commercial involvement).

## Lycos

<http://www.lycos.com/>

Of all of the Web search engines out there, Lycos probably ties with Yahoo in doing whatever is necessary to attract people to its services.

Lycos is one of the older Web search engines, and it has used this time to soften some of its rough edges. It has long been a popular spot for people who are searching for information on the Web, and thanks to its aggressive approach in its effort to give its audience what it wants, will continue to do so for some time to come.

When Lycos first started, it was a project of Carnegie-Mellon University's computer science department. It had a user interface that only a computer scientist could love, but it was usable, and would find information that you couldn't locate on other search engines. Add some corporate bucks and people versed in human-computer interaction and design, and what was a good search engine became much better. It boasted the largest catalog of Web pages to search through, but to some extent, technology has superseded Lycos' approach to cataloging the Web.

Back in the beginning, main rival Yahoo had (and still has) a search engine based primarily on a list of sites that had been carefully catalogued according to subject and content. Lycos' approach was to use a program (known as a "Web spider") that roamed the Web retrieving pages. This technological edge gave Lycos the upper hand in terms of the sheer number of Web documents that could be searched in its database. The problem is that everybody is doing this these days.

As a result, Lycos is trying to add value to its site in an attempt to keep its steady supply

of Web-searchers coming back for more. To that end they acquired Point Communications, which compiles a listing and reviews what they consider to be "The Top 5%" of all Web sites, and offered people a direct link to the "best" sites from Lycos.

You can also read the news at Point Now, which divides its selections from newspapers from around the world into sections divided into general news, business, sports, weather, and Net news. It also added "A2Z", a directory of popular entertainment Web sites.

As with Excite, none of these options directly enhances your search for information on the Web, but it may give you another reason for going to Lycos in the first place. Lycos is doing everything it can to stop becoming a Net has-been, and it is still one of the better search engines on the Web.

## Magellan

<http://www.mckinley.com/>  
(McKinley's Internet Directory)

When Magellan started up, the developers took a distinctly different tack on assembling an online guide to the Internet.

Short descriptions on Web sites are common, and are usually supplied by the people who created the Web site and are hoping to promote it. This generally does not invite objective commentary. The McKinley Group put Magellan together and built in substantial editorial content by including a directory of rated and reviewed Internet sites. Its reviewers check out thousands of new sites every week and write up pithy reviews on them. xxx+2

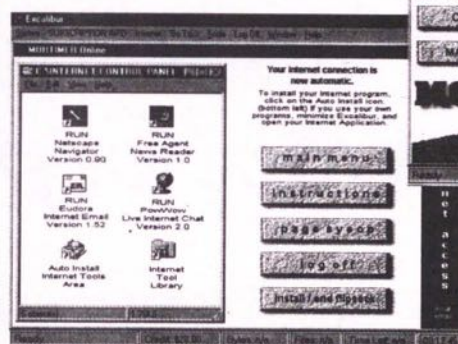
The reviewers evaluate each Web site, and award points for such things as organization,

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"Net appeal," comprehensiveness and whether or not the site is thought-provoking. Based upon the eventual score, sites are given an image file that proudly proclaims the site as a Magellan award-winning site. Web authors are encouraged to place the image file on their pages, and to use it as a link back to the Magellan Web site.

This clever marketing strategy has made the Magellan award symbols common at many of the better Web pages. Problem is, now everybody is trying to copy Magellan, and there are so many Web awards available

that they have become something of a joke.

The reviews of the Web sites vary widely in their quality, and just because a reviewer enjoyed a Web site doesn't mean that you will, and vice versa. This is a quality inherent in any reviewing process—you either like it, or don't.

At Magellan you can also check out FTP sites, gopher servers, newsgroups, and Telnet sessions as well as Web pages. It is one of very few multilingual search engines. It is currently being translated into French and German and will be available for other languages.

Depending on who you talk to, Magellan's

display layout is either a showcase of what can be done with Netscape frames, or proves that framed Web pages are a bad idea. People who use Magellan are there because they like the reviews, and it has the most reviews of any search engine. If you don't like reading reviews, then there is not much else here that hasn't been done better elsewhere.

## SaavySearch

<http://guaraldi.cs.colostate.edu:2000/form>

SaavySearch was a concept waiting to happen—why go through all of the trouble of creating your own search engine when there are plenty of good ones around?

Why not create a "meta-search engine"—one that searches several other search engines at once for you. That's exactly what the developers at SaavySearch did, by creating a "Parallel Internet Query Engine" which reports results from a keyword search from a selection of 19 Web search engines simultaneously.

SaavySearch is not particularly speedy, but it is about as thorough as you can get. When you submit a query, SaavySearch gathers the responses of several search engines—this process can take up to one minute, and in some cases, two. It uses a simple keyword search, and you are guaranteed to find something that matches what you are looking for.

The main drawback to meta-search engines is that they are only as good as the sources they draw upon—expect your searches to turn up the same information, appearing in different forms across several search engines. It is also prone to being overloaded. It is a good service, and the first of several meta-search engines to appear. It is worth checking out when you are looking for something you haven't been able to find elsewhere.

## Yahoo

<http://www.yahoo.com/>

Yahoo does not have the largest database of Web pages, but it is easily one of the most popular search engines on the Web. Yahoo was started by a couple of Stanford University grad students who put together their list of favorite Web sites when they weren't working on their engineering PhDs.

Several features make Yahoo stand out. It has enough Web pages in its catalogue to virtually guarantee a few matches on any topic. You can use the keyword search by entering a word into its search engine, or you can go through their extensive, cross-indexed directory of subjects.

The directory is divided into 14 main categories: Arts, Business and Economy, Computers and Internet, Education, Entertainment, Government, Health, News, Recreation, Reference, Regional, Science, Social Science plus Society & Culture. The search engine is powerful and easy-to-use. Each listing comes with a semi-detailed description and often a picture from the site. All the sites listed are guaranteed to be interesting, because of Yahoo's "if we don't link it, we figure you won't like it" philosophy. It is also zippy, and responses to queries only takes a few seconds.

Yahoo has a lot of innovative extra features that are useful. It was the first to list its daily additions to the Web site, which now typically number in the low thousands. Users who are interested in a weekly dose of fresh and interesting Web sites can subscribe to Yahoo's Picks of the Week list. There is Yahoo!igans (<http://www.yahooligans.com>), a subset of Yahoo's catalog aimed at children, and the innovative Yahoo Remote service.

If you have a JavaScript-capable Web browser, click on the Yahoo Remote button, and up pops a small window that you can take with you as you surf the Web. Instead of going directly back to Yahoo for information, enter it into Yahoo Remote, for instant access to Yahoo. Whenever you do a search and

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Continued on page 82



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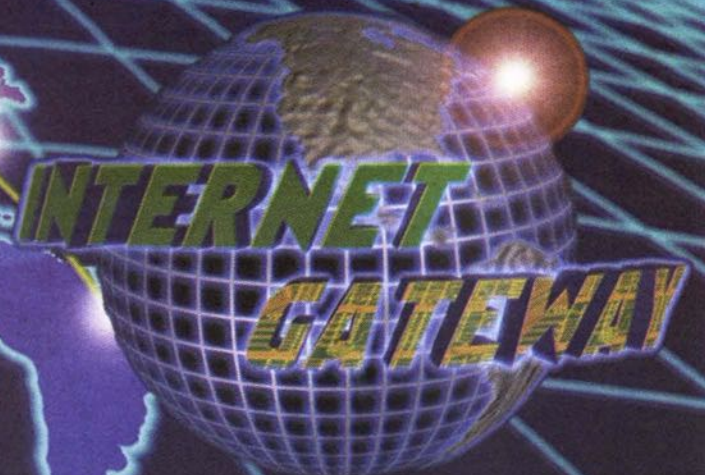


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## Lumina lets you keep your printer

New multi-function peripheral saves space and money

BY ROSS MACDONALD

Product: Lumina Series 2000 2096  
From: Lumina Office Products  
Estimated Street Price: \$560 (model 2144 = \$700)



I saw my first practical MFP at a computer trade show two years ago but — at \$2,500 — the item on display paradoxically cost more than the combined price of an ink-jet printer (\$550), stand-alone fax (\$450), hand scanner (\$150), personal photocopier (\$450) and fax/modem card (\$125). The real advantage pushed at the time was economy of desk space over just plain economy. Even now, with most estimated street prices hovering at \$1,200 to \$1,500, MFPs are at the upper end of peripheral affordability.

### The Lumina difference

So how can Lumina sell a true MFP for \$560 when everybody else wants \$1,200 or more? The rejoinder says less about covert corporate cartels than good ol' American ingenuity. The Lumina people reasoned that most computer owners already have a printer. Chances are they've already been through the ringer of studying and reading and shopping and comparing to arrive at a choice that best suits their needs. Why then, those canny Lumina

Multi-function peripherals (MFPs) combine the functions of a printer, copier, scanner, fax and fax/modem into one reasonably proportioned desktop machine.

MFPs have been around for a couple of years, but only recently, as the variety of products has grown and the prices dropped, have they commanded the attention of the average consumer.

Continued on page 76

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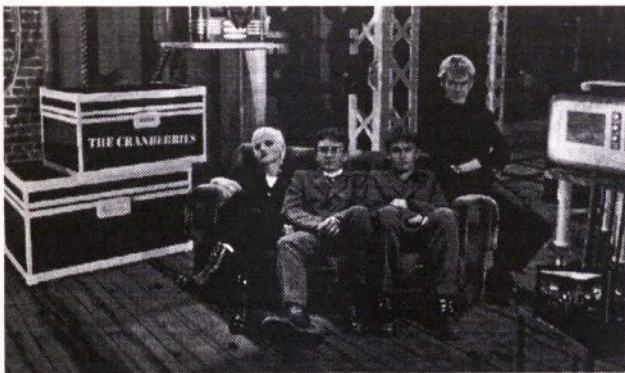
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# The Cranberries prove a little sour

## Disc fails to exploit multimedia potential

BY ROSS MCDONALD



**The Cranberries: doors and windows**

CD/CDi/MPEG/CD-ROM

From: Philips Media

Estimated Street Price: \$29.95

The Cranberries: doors and windows is another of those multi-technology discs burgeoning from pop music circles of late. Capitalizing on the fleeting popularity of multifarious musicians has necessarily become an art for music moguls who can no longer rely on taste or talent to figure out who or what will last (whadya hear from Cyndi Lauper, or Mitsou or Edie Brickell. Whadya figger Alanis Morissette's going to be up to

five years from now?).

Well, one of the heppet ways to squeeze extra dollars out of oblique artists is to produce these CD/CDi/CD-ROM discs—that's compact disc, compact disc interactive and compact disc-read only memory—that invariably tout "previously unreleased versions of" what have you, "exclusive scenes of" whatever, "rare personal" what-not, and etc. etc. And this Cranberries disc is no exception.

Made specifically for the truest, bluest fans of this overnight Irish sensation, The Cranberries: doors and windows promises "previously unreleased versions of" five songs, "exclusive" scenes of Woodstock '94 and "rare personal" photos, clippings and memorabilia from all the band members. All very tasty if you like Cranberries.

However, there's more CD than CD-ROM about this disc as the multimedia aspects of digital technology have definitely been given a back seat to the music. Up against 10 whole minutes of video (plus 5.5 minutes of digital video) stand 40 minutes of music and audio—

most of which is coded for your CD player.

Unfortunately, even Cranberry aficionados with only a modest taste for multimedia are destined for disappointment because that collective 10 minutes of video has been severely diced into a couple of dozen clips. And you don't have to have a calculator handy to estimate the length of each at that rate.

Regardless of that, doors and windows is chock full of the kinds of things that those with a hankering for Cranberries will undoubtedly find appetizing. Those short clips of performances and backstage/tour bus activities are eminently

watchable and there are a full 90 snapshots to look at while listening to their very good music.

Though tailored specifically to Cranberry admirers, this reasonably priced disc might draw others who simply enjoy an eclectic musical palate or even collectors of may-become-obscure-and-worth-something memorabilia.

Despite my disappointment at the minimal multimedia, this Cranberries disc is not a turkey. □

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## Lumina MFP

Continued from page 74

people asked themselves, should we make them purchase a second printer?

The result, I'm assured, is a unique MFP product. Where virtually all other true MFPs are printer based, the Lumina Series 2000 is centred on the fax engine. The unit is smaller, lighter and cheaper than any of the others because it performs all the printing functions using your existing printer — as long as you have one of the more popular models of ink-jet or laser printers.

That being the only real difference from other MFPs, the Lumina is a fully featured plain paper fax machine, fax/modem, scanner and copier that connects to your computer through the parallel and serial ports just like any other MFP.

### Optimizing the desktop

The Lumina is deceptively small and light, with three simple control panels and an LCD screen traversing the entire top/front panel. The raised buttons on all three of the Series 2000 control panels are well spaced and evoke a variety of "beeps" to acknowledge prestidigital success. And, lacking a printer engine, paper handling is through a single slot from the 30-sheet paper bin straight through to the front of the machine in a fashion identical to a standard, standalone fax (all other paper handling depends on your own printer).

My Lumina came bundled with Phoenix's Eclipse Fax software and a single diskette package for controlling the various functions through your computer. The press kit I received discusses the addition of an OCR package from Phoenix as well as an electronic file management application called Documagix PaperMaster SE, but these were

not in the box I received. And, perhaps also because mine was a pre-shipping unit, the documentation included a sheet warning of certain incompatibilities between Windows 95 and the Lumina control panel software.

Though certainly not tragic — and soon to be fixed — that very small sample from the Lumina literature is a good indication of how comparatively complex this machine is to get going. The user's guide is an unimimidating size, but any confidence you start out with soon evaporates as you begin to read the copious instructions. The Installation chapter alone constitutes five jam-packed pages.

The specifications for the Lumina are respectable if not overwhelming. The standard 2096 version comes with a 9600 bps modem that has an eight-page memory (the 2144 model has a 14,400 modem and 60-page memory). The scanner is a disappointing 1-bit CCD type but capable of 408 x 392 dpi resolution and achieves 64 grayscales through enhanced dithering (that means the software spruces things up). The copier function lets you scale your copy size from 25 percent to 250 percent of the original.

The only options available for the Lumina Series 2000 are 1 MB and 4 MB memory upgrades and a telephone hand set to let you get your phone off the desk too.

Overall, the Lumina Series 2000 MFP is well built and excellently conceived, though I'm not entirely enamored with the documentation or the aesthetics — this machine is unnecessarily plain. But at under \$600, you certainly can't lose, unless you're unhappy with your current printer and were planning on getting a new one. □

Contact: Lumina Office Products, 265 Santa Ana Ct., Sunnydale, CA, 94086. Tel: 800-839-0143, 408-992-1088. Fax: 408-992-1090

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BY ROD LAMIRAND

**ClarisIMPACT 2.0** (for Windows or Macintosh)  
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At *The Computer Paper*, we see every sort of software imaginable during the hustle to meetings and the bustle to deadlines that our monthly schedule dictates. One software truism that we've come to notice is that programs which try to do everything usually fail at doing any one thing well.

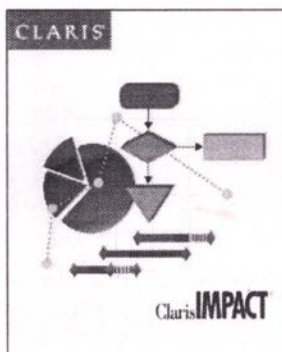
Happily, this month we ran across a polished, professional program that proved the exception to the rule.

and add it to the clipart library. It allows you to simply grab a graphic from a paint program and drop it into a slide presentation, business letter, report, outline or company logo.

ClarisIMPACT is first and foremost a solid program. It allowed me to import and export into multiple, different formats without a fuss. It took a Corel PhotoPaint graphic as easily as it exported to the Windows Paint program. It opened a Word for Windows document as well as it saved my Excel data.

Second, it is flexible. In the chart I made with scanned photos of friends for a test doc-

**Originally only written for  
the Macintosh platform,  
the program was ported over  
to Windows and survived  
the adaptation without  
serious technical problems  
or any visible alteration  
of the interface**



In the April '96 issue of *TCP* we looked at business presentation/ graphics programs. One important omission was a new product from Claris Corporation. ClarisIMPACT for Windows bills itself as "automatic charts, diagrams and more." This software, and its identical sister ClarisIMPACT for Macintosh, is a solid, well-crafted 32-bit program that is easy to use, highly flexible and fun!

Claris is best known for its ClarisWorks suite, which made one of the most graceful operating system transitions in the history of the business. Originally only written for the Macintosh platform, ClarisWorks was ported over to Windows and survived the adaptation without serious technical problems or any visible alteration of the interface.

Now, Claris has brought out another program which lives equally well on either operating system and maintains a completely consistent interface. This 32-bit program can run on Win 3.x but you will have to use the Win 32s which comes with the package. This evaluation only utilized Win 95.

ClarisIMPACT is a program that creates, and/or imports and modifies, business information for presentations, business letters, company charts, calendars, letters, spreadsheets, and practically anything else that comes out of your printer.

If you need a flowchart, there are templates or you can start from scratch. You can use any of the scores of flowchart symbols that come on this seven-disc program, or create a new symbol

ument, were components that I later used in a dummy business letter that I concocted.

If your logo is looking a little tired, open it with a paint program, touch it up and put it back in the 2,000 picture clipart library. You can pull in photos, sound data, video clips or any OLE 2-compliant data. ClarisIMPACT includes 32 data chart types and a simple interface for creating them. You can edit and stylize charts in a variety of ways. The program is full of pre-designed combinations of fonts and color schemes that help you quickly communicate your data in an attractive graphic format.

I found nothing to complain about with this program. Sure, it doesn't support right button clicking as most newer Windows 95 programs do but that is simply so it remains true to its cross platform consistency (there is only one button on a Mac mouse).

In fact you can take a ClarisIMPACT file, save it to disk and then pop it into a DOS-aware Mac and Voila!, complete compatibility. This program is not a complete paint and draw program like Micrografx's ABC Graphics Suite, nor is it a simple flowchart and business letter program.

But ClarisIMPACT is an extremely flexible mid-ranged business/SOHO program that will do most information presentation jobs, and do them most professionally. □

Contact: Claris Corp. Inc., 5201 Patrick Henry Dr., Santa Clara, CA, 95052. Tel: 800-361-6075.

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# Partition utility truly magical

PowerQuest's product makes for quicker, smoother resizing

BY JEFF HILDEBRAND

After receiving my review copy some time ago, I finally found the time and the excuse to try out PartitionMagic (PM)—OpenDoc 1.0 for OS/2 was finally released for general availability and I wanted to check it out.

The zip archive for OpenDoc was 7.1 MB—no problem there. Unzipping it consumed another 10 MB or so—still no problem, that partition had plenty of space.

Browsing the README for OpenDoc revealed that to install the OpenDoc runtime, I would need 21 MB—a big problem, since the partition where I beta-test software had only about 14 MB available.

Most users are familiar with the annoying procedure of resizing partitions the old way: first, the partitions to be modified had to be backed up; then blown away with FDISK (or a comparable utility), reallocated with new sizes, and then all the files had to be restored.

If you were lucky, this sort of job would only take up an entire evening. Partition-

Magic is a truly magical utility that can save you hours—or even days—of work.

Here's what I did with PM:

My two offending partitions were a swapdisk with no useful information and my betadisk, which holds only OS/2 and any software I might be evaluating.

I skipped what would otherwise be an essential part of the process—backing up my old data. (Note: It can not be stressed enough that if you value your data at all you should back up your disks!) PM does what it can to ensure the integrity of your data, but things like unexpected power outages can still wreak havoc with your machine.

The second step was to fire up PM and run a check on both partitions. Once this is done, PM will be happy to shrink, move, expand, create, delete or format partitions. As it turned out, I needed the first three options. I shrank my swapdisk to free up some space on the drive, moved my betadisk partition to the start of the free space, and then

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## TRAINING

expanded that same partition to include the space I had freed.

The entire process took about 30 minutes, and that time probably doesn't do justice to PM.

Since it was my first time using the program I did not turn on the "Skip bad sector checks" option, which was not really necessary as all of the disk has been in use previously and I was pretty sure there were no bad sectors. Scanning for bad sectors before a move or expand operation is probably the most time consuming part of the procedure. Had I turned this option off, I could probably have been done in 15 minutes.

After the changes were complete and I selected "Exit," PM informed me that I had to reboot to enable the changes made to the partition table (the dialog comes up with a Reboot button to hit once you are ready to shut down). After rebooting, the first thing I did was run OS/2 from my beta-test partition, which came up just fine. In fact, other than the change in the free space on that partition, everything was exactly as I had left it.

In this test drive of PM, I only covered about half of its capabilities. PM v2.0 is now a complete replacement for FDISK (the previous v1.0 did not duplicate any functions already

in FDISK, like the creation and deletion of partitions). It can format partitions as HPFS or FAT, as well as return detailed information similar to CHKDSK. PM does its best to keep you informed about the progress of the selected operation, often with several progress bars, each indicating the status of different parts of the operation.

Perhaps the best way to show the commitment to quality that PowerQuest has would be to highlight the differences between v1.0 and v2.0 of PM.

*Continued on page 82*

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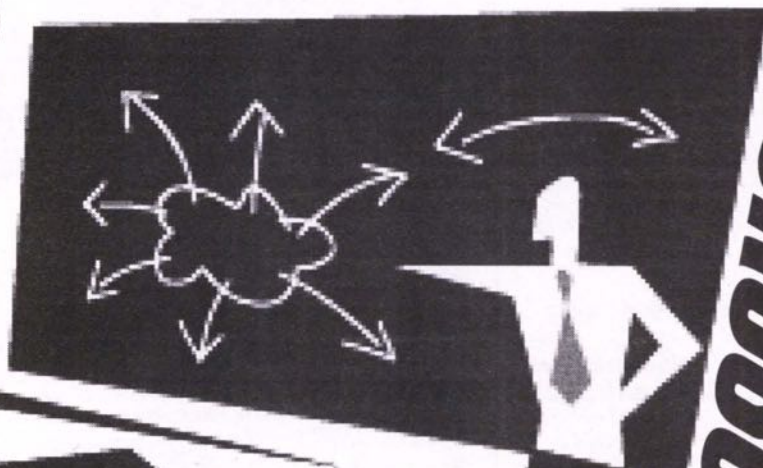


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## JUNE

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**ICCA DINNER MEETING** June 26, 1996 (Wed.). Last meeting before the summer break! If you're not yet a member, this is a perfect opportunity to find out more about the association - meet the directors and network with members. This month's speaker TBA - please check our web site (<http://www.icca-bc.org/icca/events.htm>) or call for current details. For more info & reservations call 682-2747.

**CD-ROM FESTIVAL '96** June 28-30, 1996. Edmonton, AB. For more information contact Vernon Samaroo at NAIT/Multimedia Applications (403) 421-7622.

## JULY

**LAN EXPO '96** at COMDEX/Canada. July 10-12, 1996. Toronto, ON. For more information contact Adam Torres at Softbank Comdex (617) 433-1807.

**WINDOWS WORLD '96** AT COMDEX/CANADA '96. July 10-12, 1996. Toronto, ON. For more information contact Robert Berkowitz at Softbank Comdex (617) 433-1806.

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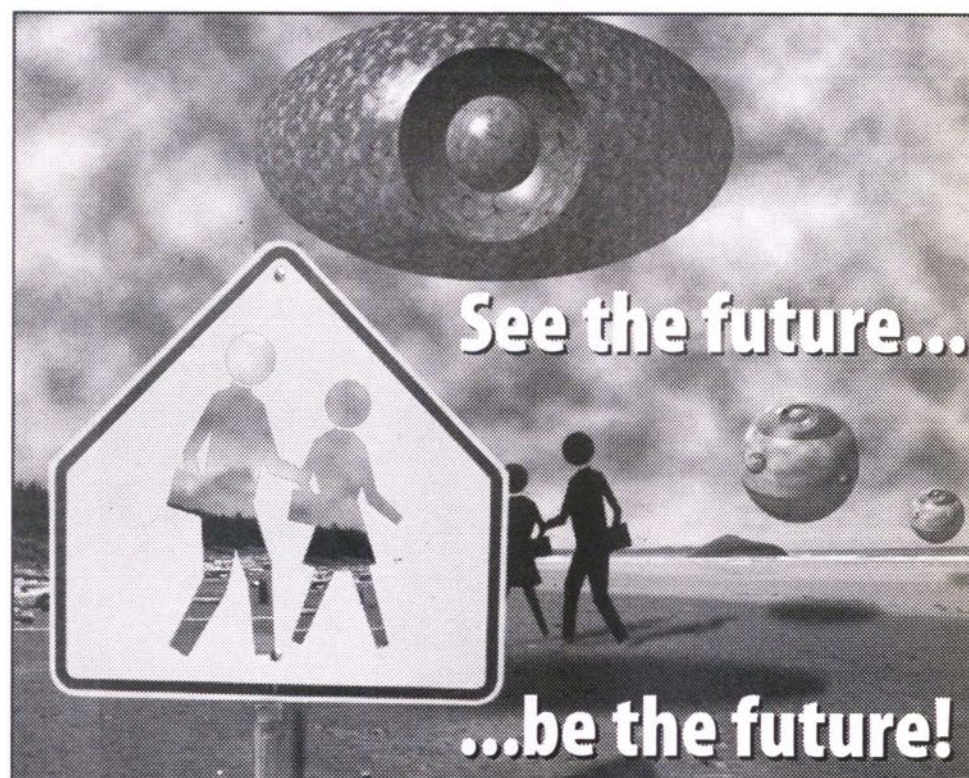
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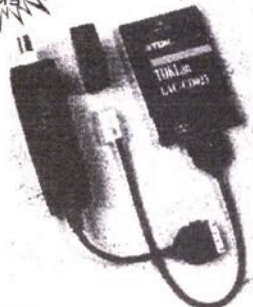


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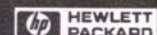
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### From Alta Vista to Yahoo

Continued from page 72

Yahoo cannot find a match, it automatically sends the search terms to the Canadian-based search engine Open Text (<http://www.opentext.com>), for more results. If that doesn't turn up anything, you can click a link to send your search terms to another search engine.

Yahoo does have shortcomings. It searches for words that appear in the titles, address or description of the sites that appears in its catalog, so it is not likely to find a keyword appearing in the body of a Web Page. As one

of the first search engines to appear, it has a lot of references to Web pages that no longer exist. But despite those limitations, its many innovative approaches ensure its reputation as one of the more popular search engines/directories on the Web. Yahoo is still hard to beat.

### Endless Searching

So which one should you use? It all depends on what you're looking for, and how adept you are at surfing your way around the Web. It's always a good idea to keep a bookmark list of several Web search engines and directories in your Web browser, though ultimately, stick with whatever works best for you. □

### TRAINING CON'T

### Partition utility magical

Continued from page 79

|                         | PM v1.0              | PM v2.0   |
|-------------------------|----------------------|---|
| Manual size             | 75 pages             | 124 pages   |
| Operations              | shrink, move, expand | shrink, move, expand, create, delete, format, resize clusters |
| Recognized file systems | FAT, HPFS            | FAT, HPFS, NTFS, Linux ext2, NetWare                          |
| Resizable               | FAT, HPFS            | FAT, HPFS   |
| Movable                 | FAT, HPFS            | FAT, HPFS, NTFS   |
| Platforms               | DOS, OS/2            | DOS, OS/2, Windows, Windows 95                                |

This is not a comprehensive list of changes, but it does give a fair indication of the work PowerQuest has put into v2.0. I should also mention here the quality of the manual. A page count as given above doesn't

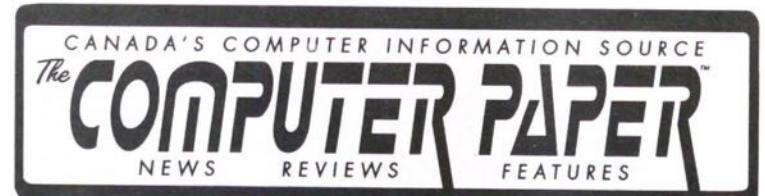
really say anything about the quality of what is printed on those pages.

The manual for PM v1.0 was excellent. It gave an overview of what partitions are and why they exist, how to install PM, how to use it, a glossary of terms and an index.

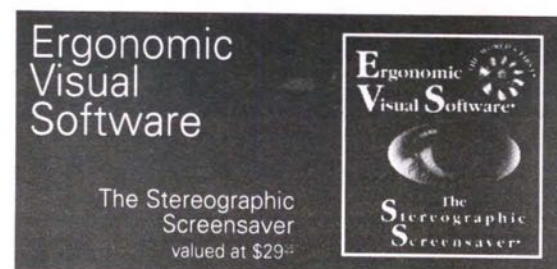
The manual for v2.0 gives more of the same. All of the new functions require more screen shots and examples, and the glossary and index have both grown. Besides being an excellent manual for PM, it is also an excellent introduction to disk drives, partitions, file systems, and disk management.

One thing that the table does make perfectly clear is PowerQuest's commitment to its product. With steps taken to improve virtually every aspect of PM, it is already an indispensable utility for most home and corporate users. □

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ATTENTION USER GROUPS. Send in your listing (maximum 120 characters) for the August issue by Monday, July 8, 1996. Submissions run for one month only in the local edition. The Computer Paper reserves the right not to print submissions which are deemed unsuitable.

ACM/SIGGRAPH Computer Graphics. 2nd Tuesday, at 201-1140 Homer St. Call Tom Berryhill at 734-3976.

ADAM OWNERS! Vancouver Island Senior ADAMphiles (Visa): newsletter, meetings, supplies. Contact David Cobley, #17, 885 Berwick Road, Qualicum Beach, B.C. V9K 1N7. (604) 752-1984.

ALT.2600 VANCOUVER USER GROUP. Meeting are 1st Friday of each month at Pacific Center Mall by payphones in Food Court, north of Dunsuir at Granville 4pm to 9pm. Starts early to catch the evening shift 2600ers. For more information contact Steve via email at <sage@vancb.wimsey.com> or <sage@rainbow.descon.com>

AMIGA USER GROUP (PaNorAmA) For meeting times and place call: Ray Norman 589-7199 or Robert Hardy 942-8364. BBS numbers 231-0363 or 231-0364.

APPLES B.C. COMPUTER SOCIETY. A User Group for Macintosh and Apple IIs. Macintosh meetings are on 3rd Wednesday of each month at the York House School in Vancouver at 7 p.m. Novice and other special-interest groups are held mid-month. Apple II meetings are on 1st Monday of each month at 7 p.m. at the Century House in New Westminster. For further info call 437-9935 or 299-9597.

ATARI USERS! Vantari, P.O. Box 3614 Main Post Office, Vancouver, B.C., V6B 3Y6. Bill Sutherland 988-1450; Don Hatch 433-8055. Meets 2nd Wed, 7:30 p.m., Hastings Comm. Ctr., 3096 E. Hastings.

B.C. EDI USER GROUP. For more information call 532-8204 (preferred), or voice mail 532-8219.

B.C. INTERGRAPH USERS GROUP (BCIUG). Contact: Mike Barnes 528-1936 (voice) or 528-2944 (Fax) for info on next meeting.

B.C. OPENSTEP GROUP. Regular monthly meetings focus on various themes, for single users, corporate users and developers in the Vancouver area. NextStep and Open Step are the preferred platform for rapid development. For meeting information and email server call Kevin Hiebert at 264-1584 or <khiebert@wimsey.com>.

B.C. REGIONAL USERS GROUP SOCIETY of Hewlett-Packard Users. For info, call Daren Statchuk at 661-8753 or BCRUG at 661-8048.

B.C. VAX/VMS Local Users Group (BCVAXLUG) provides a forum for the professional growth and education of its members through the exchange of solutions, ideas, and opinions. User group meetings are held the 3rd Wed of every other month at 6:30 p.m. and location to be advised. For further info please call voicemail 276-6966.

BIG BLUE AND COUSINS. P.O. Box 5309, Station B, Victoria, V8R 6S4. General meeting last Wednesday, 7:30 p.m. at U. Vic. Elliott Bldg., Lecture Theatre 168. Also, special interest group meetings. 382-3934.

CANADIANS ON COMPUSERVE. Canadians around the world and anyone interested in things Canadian are joining the Canadian issues section of The Issues forum on CompuServe. Lively discussions center around politics, society, customs and conflicts. Plus, there's a growing library of Canadian files. Go Issues at any CompuServe prompt. Dial 1-800-848-8199 for more info.

CIPS VANCOUVER SECTION. (Canada's largest Association for Computer Professionals). CIPS Members enjoy unparalleled networking and professional development opportunities at our monthly meetings and special events. Discounts offered for student members. PO Box 20522, Howe St. Vancouver, B.C. V6Z 2N8. Phone (604) 681-2796 or Fax (604) 689-1879 for next meeting date.

CONSULTANT USER GROUP. (Associated with the Vancouver PC User Group). Educates consultants. Sharing of ideas. Business side of being a consultant. Meetings are the 3rd Thursday of the month, at the Oakridge Library, Meeting Room, 191 - 650 W 41st Ave., Vancouver. Southwest corner of the mall next to the Valetor Cleaners, 5:30pm. Free. For further information call: Ritch.Net: 432-6554 or syv@infomatch.com

COREL ARTISTS USER GROUP. Last Tuesday of every month, 7:00 to 10:00 pm, at Kwantlen College in Richmond, BC. Monthly newsletter. Contact: Bev Marcus, 533-5854.

DATA-LINK/USERS GROUP. Tel 321-3387. PC support BBS: 321-8873 (24 hr service), with specialized self-made BBS software. The purpose of this User group is to allow users to get together for problem solving, discussion of setup and to meet people. Call by voice 8 a.m.-4:30 p.m. ONLY please. This group is dedicated to RoboBOARD by Seth Hamilton. Other BBS software are welcome. Membership is free!

FOXSOFT, EDMONTON'S FOXPRO USERS GROUP-second Tuesday, 7:00 p.m., Grant MacEwan City Centre Campus, East Wing, Room C-137/C-135, 10700-104 Ave. Contact: Ken Rayner at 437-0315 or Robin Stuart at 460-3712 (days). Info Bulletins on BBS 457-4105.

GENERIC CADD USERS GROUP. Contact: Frank Zander (604) 582-8283. BBS: 294-8287 (9600 n.8.1).

HELP DESK INSTITUTE LOCAL CHAPTER. An organization providing training, education and a networking forum for Help Desk Professionals: Those people who help computer users with hardware or software problems. For more information on memberships, please call Gary Taylor at 665-0728 or Karen Yuen at 665-5799.

INDEPENDENT COMPUTER CONSULTANTS ASSOCIATION OF BC. The ICCA is a non-profit association of consultants who provide services in the field of Information Technology. The objectives of the ICCA are to provide a forum where consultants can network with each other, exchange ideas, and improve their business and computer skills. Monthly meetings with speakers. For further information contact us at: PO Box 820, Bentall Station, Vancouver, BC V6C 2N6 tel: 682-2747 fax: 681-0916 email: icca@mindlink.bc.ca / WWW: http://www.icca-bc.org/icca/

LOTUS NOTES. - see "Pacific Notes User Group"

MACWEST COMPUTER SOCIETY. Meetings for members and visitors include PD copy sessions. General meetings: 2nd Wednesday of each month; Beginner's meetings: 3rd Wednesday of each month. 7:30 p.m., Guildford Public Library, Surrey. Messages and information at 268-9530.

MS ACCESS TECHNICAL USER'S GROUP. For those who want to participate in learning more about MS Access. For information call Greg Hind at 454-0262, from 9:00 to 5:00.

NANUGS (Northern Alberta Novell Users Group Society) - meets quarterly at the CompuSmart store on Mayfield Road. For information, please e-mail to nanugs@freenet.edmonton.ab.ca or phone Mike Brown (403)487-7666.

OBJECTS USER SOCIETY. See British Columbia OpenStep Group (B.C.O.G.).

OPENSTEP USER SOCIETY (VNUS). See British Columbia OpenStep Group (B.C.O.G.).

PACIFIC NOTES USER GROUP (PACNUG) - Lotus Notes users meet the last Wednesday of each month. 5:15pm on 18th floor, Waterfront Centre, 200 Burrard, Vancouver. Contact Delores Beier at 988-2141 or delores-b@awcda.com.

PC/MAC USER GROUP. Wanted Professional Photography/Graphic Designers to share, network and learn the latest hardware and software programs available. Starting May 7th we will meet at 7:00pm every 1st and 3rd Tuesday of the month, at Tricera Computer Center, #203-1836 W 5th Ave. If you are interested please contact: B. Hanington at either 873-6915 or rasta@mindlink.bc.ca for further info.

PORT COQUITLAM COMPUTER CLUB. Commodore, Amiga & IBM. 1st & 3rd Tuesday, 7:30 p.m., Room 104, George Pearkes Jr. Sec. School, 1390 Laurier Ave., Port Coquitlam. Mike Evans 942-4286.

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T.I. 99/4A COMPUTER B.C. 99er Users Group, every Thursday 7-10 p.m. For information, call Ron: 522-2598. 1st Thursday Tutorials, 2nd Thursday General, 3rd Thursday Tutorials, 4th Thursday Library night. BBS "Dial A T1" 522-9830 T1 only please.

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Coulson 279-5439 or email garland\_coulson@topkids.com

VANCOUVER AUTOCAD USERS SOCIETY. 1st Wed. of the month, 7:30 p.m., B.C.I.T. Bby. Campus Bldg. SW5 Room 1850. Contact: Frank Zander (604) 582-8283.

VANCOUVER DATABASE USER GROUP is official user group sponsored by Borland Canada for dBase and Paradox (both DOS and Windows). The group meets on the 2nd Wed. of each month, 6:30 p.m. at Doppler Computer Store, 485 W. 8th Ave., Vancouver. Meeting agenda is distributed via fax monthly. Contact Michael Li at (604) 432-1709 to add your name to their database.

VANCOUVER DELPHI DEVELOPERS ASSOCIATION meets once a month at the Vancouver Public Library (downtown). The meeting is usually on the 2nd or 3rd week of the month on Tue or Wed depending on availability of facilities. The purpose of the group is to provide

Continued on page 85

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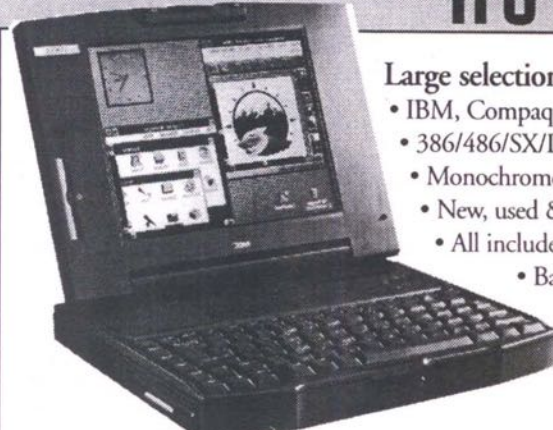
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VANCOUVER NETWORK USERS GROUP (VNUG) is an official user group recognized by the Network Users' International Assoc. and supported, in part, by Novell. Meetings are held on the first business Monday of every month at The Stanley Park Dining Pavilion. All aspects of the networking environment are discussed and presented with emphasis on the Network network operating system. The workshop begins at 4:00p.m., buffet dinner at 6:00p.m., at 7:00p.m. is a Q&A session followed by a presentation ending at around 8:30p.m. Member, no-member and student pricing applies to the workshop and/or dinner presentation. For further info or meeting topic announcements call our voice mail at 689-VNUG (689-8684) or Fax us at 689-8656.

VANCOUVER OS/2 USER GROUP. Attended by OS/2 gurus and novices alike and well supported by IBM. The large and lively meeting is held on the first Wednesday of

each month at the BC Tel Building, 3777 Kingsway, Burnaby and starts at 6:45 pm. Join us for an informal workshop beginning at 11:30 am on the first and third Saturdays of each month at Doppler Computer Superstores, 485 W. 8th Ave., Vancouver. Contact: Jim Shewchuk 876-4780.

VANCOUVER PC USERS SOCIETY (VPCUS). 2nd Thursday, 7pm at Science World, \$5 guest admission. General Q&A session, feature presentation. Special Interest Groups (see also separate listings) and educational seminar registration. On-disk newsletter. Telephone: 290-0660.

VANCOUVER SMALLTALK USERS GROUP (VSMUG) is a group of individuals and organizations interested in object-oriented analysis, design, and programming with a particular emphasis on Smalltalk. Primarily for individual developers to meet, share ideas and experiences, discuss technical issues and learn cool stuff. It's designed not to be a forum for sales pitches from vendors. RSVP to Ann Patrick ([apatrik@mpc.ca](mailto:apatrik@mpc.ca) or 604-293-5144). For more information check out our web site at <http://lucy.csc.uvic.ca/~bnfb>.

VANCOUVER WINDOWS NT USERS GROUP (VANTUG) is a forum for both developers and administrators interested in sharing their NT experience with their peers. Meetings are held every two months at the Justice Institute of BC (JIBC) in New Westminster. For more information, contact Glen Houghton at [goughton@jibc.org](mailto:goughton@jibc.org) or at (604) 528-5501.

VISUAL BASIC PROGRAMMERS GROUP - Contact Johann 930-8248.

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VPCUS Internet SIG Meets last Wednesday of month, 7pm at 1129 Main Street. Contact Joe Thompson at [Dynahan@Wimsey.com](mailto:Dynahan@Wimsey.com)

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VPCUS Windows/C++. For programmers and intermediate-to-expert Windows users who are interested in C, Access, Visual Basic. Meets second Tuesday of month at 7pm at Drake Computer Training offices, 888 Dunsmuir. Contact Casey Hawthorne 879-2703 or [caseyh@wimsey.com](mailto:caseyh@wimsey.com).

VPCUS WordPerfect SIG Participants share tips and tricks, occasional presentations by WordPerfect Corp. Meets second Tuesday of month at Drake Computer Training offices, 888 Dunsmuir, 3rd floor, 7:00 pm. Contact Holly Rivers 731-0039.

WINDOWS NT. User group being formed. Meetings are planned for first Saturday. To enroll call Perform System Developers at voice mail 604-264-0247.

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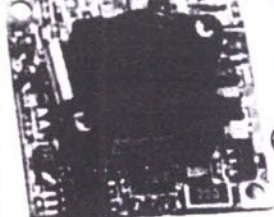


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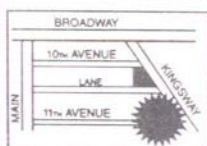
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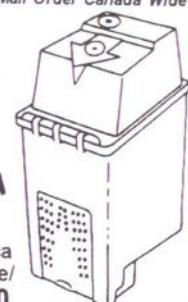
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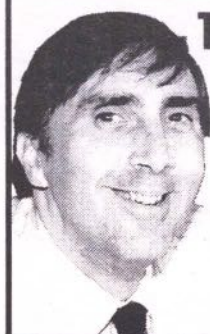
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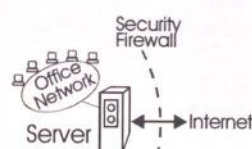
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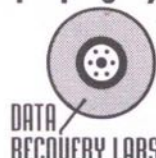
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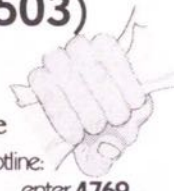
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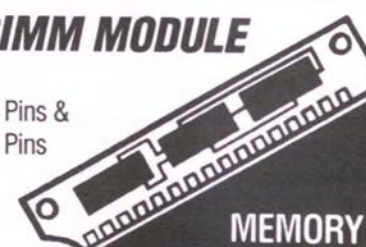
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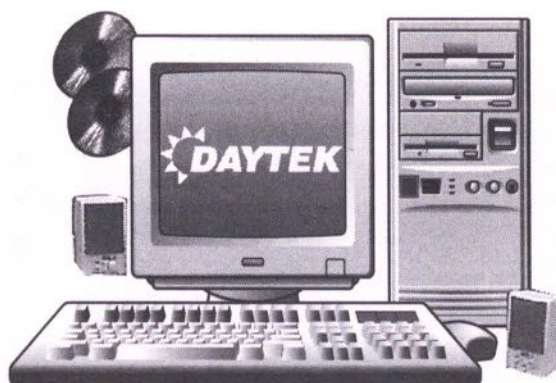
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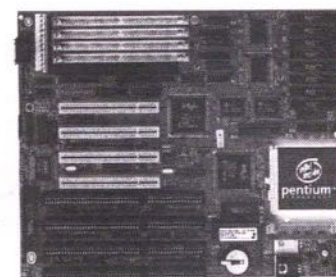
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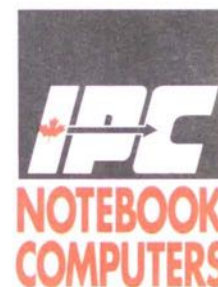
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